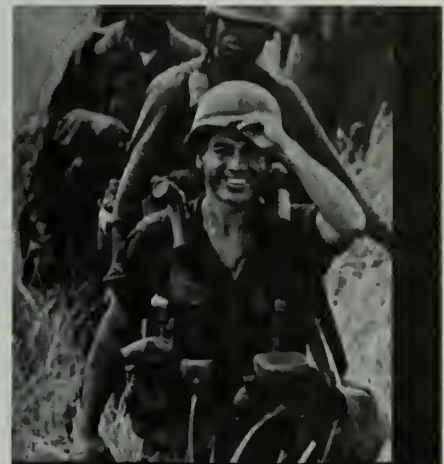


DEFENSE INDUSTRY BULLETIN

Volume 3, No. 2

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Defense Department Budget Breakdown

Fiscal Year 1968

Financial tables relating to the Defense Department budget for FY 1968, prepared by the Office of the Assistant Secretary of Defense (Comptroller), are published in this issue on pages 41 to 51.

The tables cover the following areas:

1. Budget Summary.
2. Summary of the FY 1967 Supplementals.
3. Financial Summary.
4. Direct Budget Plan [Total Obligational Authority (TOA)], New Obligational Authority and Expenditures, FY 1966-68.
5. Direct Budget Plan (TOA), New Obligational Authority and Expenditures, FY 1966-68, by Functional Title and Service.
6. Estimated Obligations and Amounts Available for Obligation, General Fund Appropriations, FY 1966-1968.
7. Estimated Expenditures and Amounts Available for Expenditure, FY 1966-1968.
8. Order of Magnitude Data on Comparative New Obligational Authority by Functional Title, FY 1954-1968.
9. Order of Magnitude Data on Comparative Expenditures by Functional Title, FY 1954-1968.
10. Financial Summary of FY 1967 Budget, Appropriations Enacted and Supplementals Proposed.
11. Net additions to the FY 1967 Procurement Program for Southeast Asia.
12. Major Procurement Item Quantities, FY 1967 and 1968 Programs.
13. Military and Civilian Personnel, Yearend Number.

DOD Procurement Conferences Set

Defense Department procurement conferences of particular interest to small business and labor surplus area firms have been scheduled during April 1967. Army, Navy, Air Force and Defense Supply Agency counselors, along with representatives of Federal civilian agencies, will be on hand with current Invitations for Bid and Requests for Proposal. Several DOD prime contractors will have representatives available to discuss subcontract opportunities.

Schedule, location and contacts are as follows:

April 7, New Orleans, La.

Contact: Kenneth A. Languth
Gulf South Research Institute
708 Maritime Building
New Orleans, La. 70130

April 20-21, Orlando, Fla.

Contact: Don Rathel
Florida Defense/Space Industries Assn.
Herndon Airport Terminal Building
Orlando, Fla. 32803

April 27, Indianapolis, Ind.

Contact: Crawford Parker
Executive Vice President
Indiana Manufacturers Assn.
120 E. Market
Indianapolis, Ind. 46204



DEFENSE INDUSTRY BULLETIN

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The purpose of the *Bulletin* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

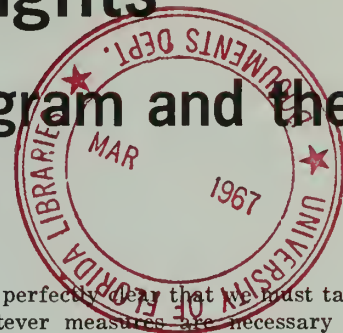
Material in the *Bulletin* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *Bulletin* is distributed without charge each month to representatives of industry and to agencies of the Department of Defense, Army, Navy and Air Force. Requests for copies should be addressed to the Business & Labor Division, OASD(PA), Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, (202) OXford 5-2709.

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Defense Budget Highlights

Approach to the FY 1968-72 Program and the FY 1967-68 Budgets



[Editor's Note: This issue of the Defense Industry Bulletin is devoted almost entirely to Secretary of Defense Robert S. McNamara's statement on Jan. 23, 1967, before a joint session of the Senate Armed Services Committee and the Senate Subcommittee on Department of Defense Appropriations on the FY 1968-72 Defense Program and the 1968 Defense Budget.]

While space limitations permit only an abbreviated treatment of the statement, an attempt has been made to excerpt those portions which are of special interest to defense industry. Using the method established in previous years, paragraph markings have been deleted from the original text for the sake of clarity.

The statement of the Secretary of Defense on the FY 1967 Supplemental for Southeast Asia will be carried in next month's issue of the Bulletin.]

Last year when I appeared before this Committee in support of the FY 1967-71 program and the FY 1967 Budget I said:

"With regard to the preparation of the FY 1967-71 program and the FY 1966 Supplemental and the FY 1967 Budget, we have had to make a somewhat arbitrary assumption regarding the duration of the conflict in Southeast Asia. Since we have no way of knowing how long it will actually last, or how it will evolve, we have budgeted for combat operations through the end of June 1967. This means that if it later appears that the conflict will continue beyond that date, or if it should expand beyond the level assumed in our present plans, we will come back to the Congress with an additional FY 1967 request."

Throughout the spring and summer of last year in my appearances before various Congressional Committees, I

reiterated the fact that the FY 1967 Budget was based on the arbitrary assumption that the conflict would end by June 1967, and that additional funds would be required if the conflict continued. . . .

What we were trying to do was to avoid the overfunding which occurred during the Korean War when the Defense Department requested far more funds than were actually needed. For example, the Defense Department requested a total of about \$164 billion for the three fiscal years 1951-53; the Congress appropriated a total of \$156 billion; the amount actually expended was \$102 billion; and the unexpended balances rose from \$10.7 billion at the end of FY 1950 to \$62 billion by the end of FY 1953. It took about five years to work the unexpended balance down to about \$32 billion; and we were able to support a Defense program of about \$50 billion a year during FY 1962-64 with about \$30 billion of unexpended balances. . . .

Although we still have no way of knowing when the conflict will end,

it is perfectly clear that we must take whatever measures are necessary to ensure our ability to support our forces in the event the conflict does continue beyond June 30, 1967. Indeed, when it became apparent last summer that this was likely to be the case, we continued the buildup of our military personnel strength beyond the level anticipated in the FY 1967 Budget and took action to ensure that deliveries of long lead time items would continue beyond June 30, 1967, without interruption. The Congress was informed of these actions through the reprogramming process and related hearings.

But, while it was clear even last summer that additional funds would be required for FY 1967 if the conflict in Southeast Asia were to continue, the timing and the amount of the additional request posed a problem. With regard to timing, we had essentially two alternatives: request an amendment to the FY 1967 Budget in the summer of 1966, while it was still before the Congress; or wait until early the following year and request a Supplemental appropriation. Each of these alternatives had certain advantages and disadvantages. . . .

The major disadvantage of waiting for a Supplemental has been the need to reprogram, on a rather large scale, available FY 1967 funds to meet our most urgent longer lead time procurement requirements, pending the availability of the additional funds. We recognize that this extensive reprogramming has placed an extra burden not only on the Defense Department but on the Armed Services Committees and the Defense Appropriations Subcommittees as well. Some of these reprogramming actions required the prior approval of this and other interested Committees; all of them have been reported to the Committees concerned. However, in order to facilitate your consideration of the FY 1967 Supplemental request we have pre-



Secretary of Defense
Robert S. McNamara

pared a recapitulation of all of the major procurement program adjustments affecting that fiscal year, which will be furnished separately.

Now, with a year and a half of combat experience in Southeast Asia behind us, I believe that we have a much better understanding of our future requirements. In October 1965, when the FY 1967 Budget was being developed, we were in the midst of an explosive buildup in South Vietnam; it was then that we moved over 100,000 men 10,000 miles in less than 120 days. The future was impossible to predict with accuracy. In contrast, in October 1966, at the time of the preparation of the FY 1968 program, we could look ahead to the time when our forces in Southeast Asia could be expected to level off. . . .

Since we can now project our requirements for the conflict in Southeast Asia with far greater confidence than last year, we have changed our basic approach in preparing the FY 1967 Supplemental as well as the FY 1968 Budget. Sufficient funds are being requested in both the FY 1967 Supplemental and the FY 1968 Budget to protect the production lead time on all combat essential items until FY 1969 funds would become available. . . . Thus if it later appears that the conflict will continue beyond June 30, 1968, we would be able to use FY 1969 funds to order additional ammunition for delivery after December 1968 and keep the production lines going without interruption.

In the case of tactical aircraft, which have a production lead time on the average of about 18 months, we have included sufficient funds in the FY 1967 Supplemental and the regular FY 1968 Budget to cover deliveries at rates sufficient to offset combat attrition in Southeast Asia to January 1, 1970. If it later appears that all of such aircraft will not be required to replace combat attrition, the production of some might be cancelled and some used to modernize the forces at a faster rate than presently planned.

Similar provisions have been made in the FY 1967 Supplemental and the FY 1968 Budget for other categories of materiel which would be affected by the continuation of combat operations in Southeast Asia beyond June 1968. Accordingly, barring a significant change in the character or scope

of the Southeast Asia conflict, or unforeseen emergencies elsewhere in the world, the FY 1967 Supplemental and FY 1968 Budget should be sufficient to cover our requirements until FY 1969 funds become available, even if the conflict continues beyond June 30, 1968.

Because of the large demands of the Southeast Asia conflict, I have deleted from both the FY 1967 Supplemental and the FY 1968 Budget, procurement funds which are required simply for the replacement of items already in the inventory with later models, except for tactical aircraft and helicopters and where the newer item is being procured to replace consumption. This type of marginal modernization can be safely deferred to a later time.

With regard to military construction, we have included funds in the FY 1968 Budget for military family housing and other categories of "non-combat" facilities, e.g., replacement of old barracks, BOQ's, maintenance shops, administration and school buildings, etc. We deferred these types of construction programs in FY 1966 and 1967 in order to reduce our demand on an economy already laboring under inflationary pressures. Now that these pressures appear to be subsiding, we should be prepared to assume the orderly modernization and expansion of our physical plant, which represents an investment, in terms of acquisition cost, of well over \$35 billion. The rate at which we do so will depend upon economic developments during the next 12 to 18 months. In any event, we would first release the balance of the FY 1966 military construction program (about \$565 million), and then move forward with the FY 1968 program, for which a total of \$2,123 million has been included for Military Construction and \$267 million for the construction of Military Family Housing.

Needless to say, we are continuing our cost reduction efforts with undiminished vigor. And, as you know, we have developed another list of base closings and consolidations, none of which will in any way affect our combat capabilities in Southeast Asia or elsewhere.

By eliminating unneeded and marginal activities and deferring whatever can be safely deferred, I have been able to reduce the FY 1967 Supplemental and the FY 1968 Budget

requests of the Services and Defense Agencies by about \$23.3 billion, while at the same time providing for all essential military requirements. We are requesting for FY 1967 a total of \$72.8 billion in new obligational authority, of which \$12.3 billion is in the special Supplemental for Southeast Asia. For FY 1968 we are requesting a total of \$75.3 billion in new obligational authority. Expenditures are now estimated at \$67.95 billion for FY 1967 (\$9.65 billion above the original budget estimate) and \$73.1 billion for FY 1968.

* * * * *

Impact of the Defense Program on the Balance of Payments

During the past year the progress that the United States has been making in its efforts to eliminate the troublesome deficit in its international balances of payments was arrested. By 1965, the overall "liquidity" deficit was slightly over \$1.3 billion, down substantially from the \$2.8 billion level of the previous year, and we were hoping for a further improvement in 1966. However, we now expect that when final data are available for that year, they will show that on a liquidity basis the deficit was roughly the same as the year before. The chief factors in this development were some deterioration on the trade accounts stemming from the rapid domestic economic expansion during the period and higher Defense expenditures abroad.

As you know, for many years the Department of Defense has been making a vigorous effort to reduce the net impact of its program on the U.S. balance of payments while still maintaining all necessary combat capabilities and avoiding undue hardships for the individual serviceman or his dependents. Figure 1 summarizes the results of this effort over the FY 1961-66 period.

As you can see, between FY 1961 and FY 1965 we succeeded in reducing the net adverse balance on the "Defense" account by half, from \$2.8 billion to \$1.4 billion. This reduction was achieved through a dramatic rise in receipts from sales of U.S. military goods and services to foreign countries, coupled with a successful effort to hold down overseas expendi-

tures in face of substantial increases in foreign prices and wages and in the pay of U.S. Defense Department personnel. For example, in Europe the cost of living went up about 16 percent and wage rates rose more than 30 percent. However, during FY 1966 the requirements of the Southeast Asia conflict, together with a modest though, hopefully, temporary decline in military sales receipts, combined to raise the net adverse balance to \$2.1 billion.

The major factor underlying this rise, of course, has been the war in Vietnam. Military expenditures abroad are closely related to the size of our deployments overseas. Between June 1965 and June 1966, the total number of U.S. military personnel in South Vietnam rose from 59,900 to 267,500, an increase of 207,600. In addition, it was necessary to undertake very large construction and logistics efforts in support of operations in Southeast Asia, both of which added to the payments deficit. These additional foreign exchange costs were not unexpected (once the dimensions of our commitment there became apparent), and I reported to you a year ago that the conflict might raise such costs several hundred million dollars above pre-buildup levels; indeed, we now estimate that there were approximately \$500 million of such additional expenditures in FY 1966.

We recognized this threat to our balance of payments from the beginning and we have taken extraordinary measures to minimize its impact. Nevertheless, we must expect that the higher Southeast Asia deploy-

ments planned over the next year and a half will inevitably cause our overseas spending to rise still higher in the months ahead. Indeed, it now appears that Vietnam-related foreign exchange costs in FY 1967 will run over \$1 billion higher than the pre-buildup year of FY 1965.

In previous years I have described in some detail the Defense Department's actions to limit the balance of payments effects of our overseas programs, including:

- The prompt withdrawal of U.S. forces from overseas areas whenever changes in circumstances, our own capabilities, or those of our allies permit such action.

- A continuing review of the requirement for and the efficient utilization of overseas installations with a view to eliminating or consolidating these facilities in order to reduce their costs to a minimum.

- Acceptance of up to 50 percent cost penalties (in some cases more) in order to favor procurement of U.S.-produced goods and services over those of foreign countries. Through FY 1966, nearly \$300 million of such procurement was diverted to U. S. sources.

- The virtual cessation of new off-shore procurement for the Military Assistance Program. In FY 1966, expenditures for such procurement were less than a third the FY 1963 level.

- Efforts to encourage Defense Department personnel to reduce their overseas spending and, conversely, to increase their personal savings.

- Sharp curbs on the size of U.S.

headquarters staffs abroad and on the number of foreign national employees.

With the escalation of the conflict in Southeast Asia, a number of special measures have been added. For example, in the area of personal spending, disbursement procedures were modified to make it easier for a serviceman to leave his pay "on the books" or increase the size of the allotment sent home. A most promising step was the enactment by the Congress last August of the Uniform Service Savings Deposit Program which authorizes interest rates of up to 10 percent to encourage savings by servicemen overseas. We have initiated a vigorous educational program to complement this new savings opportunity and the results to date have been most encouraging. Total deposits under this legislation in the first three months (September–November 1966) totaled \$23.4 million.

In the construction area, special procedures have been put into effect to minimize the balance of payments costs of our large building program in Southeast Asia, again with gratifying results to date. For example, during FY 1966, only about one-fifth of the \$372 million paid our principal contractor in Vietnam entered the balance of payments. The rest in effect was "returned" to the United States to buy American goods and services, including transportation on U.S. flag vessels. Most important, this was accomplished without impeding in any way the progress of the construction work itself.

With respect to military receipts, the decrease in FY 1966 can be traced almost entirely to the phasing of actual receipts from the Federal Republic of Germany, with whom we have had an agreement to offset U.S. military expenditures in that country. The basic agreement called for the Germans to make payments in FY 1966–67 of \$1,350 million for purchases of U.S. military goods and services required to meet their defense needs.

With regard to our military sales program, I have the impression that our policies and objectives in this area are not very well understood, either at home or overseas. For example, allegations have been made:

- That we are forcing unwanted arms on countries.
- That we are selling arms to coun-

	(\$ Billions, Fiscal Years)					
EXPENDITURES	1961	1962	1963	1964	1965	1966
U.S. Forces and their Support (Excl Incr in SEA Exp over FY 61)	\$2.5	\$2.4	\$2.4	\$2.5	\$2.3	\$2.4
Military Assistance	.3	.2	.3	.2	.2	.2
Other (AEC, etc.)	.3	.3	.3	.1	.1	.1
Total	\$3.1	\$3.0	\$3.0	\$2.8	\$2.6	\$2.6
RECEIPTS	— .3	— .9	— 1.4	— 1.2	— 1.3	— 1.2
NET ADVERSE BALANCE (Excl Incr in SEA Exp over FY 61)	\$2.8	\$2.1	\$1.6	\$1.6	\$1.2	\$1.4
Increase in SEA Exp over FY 61)	—	—	.1	.1	.2	.7
NET ADVERSE BALANCE	\$2.8	\$2.1	\$1.7	\$1.7	\$1.4	\$2.1

Figure 1

tries which have no legitimate use for them and which could better use their scarce resources to improve the lot of their people.

- That by indiscriminately selling arms, we are promoting the arms race and undermining the peace.

- That in some cases our military sales efforts are thwarting the objectives of our own economic aid programs.

- That our military sales efforts are motivated primarily by balance of payments considerations, abetted by the desire for profits on the part of U.S. manufacturers.

All of these allegations are false and are based on a misunderstanding or lack of knowledge of the facts involved. I believe it would be useful, therefore, to review briefly the background and origin of the present foreign military sales program.

It has been widely recognized in our country, at least since the Korean War, that the collective defense of the Free World required armed allies, and somewhat more belatedly, that the internal security of most countries requires some armed forces. Circumstances of history, in particular the greatly weakened economic condition of most countries following World War II, forced on the United States the role of major armament supplier to the Free World. Accordingly, during the decade of the 1950's, the United States had to meet the legitimate armament needs of its friends primarily through a large grant aid program. Indeed, of the \$22 billion of U.S. military exports during the 1950's, \$17 billion were financed by Congressional appropriations.

By the latter part of the decade, however, many of these countries had become prosperous again, enabling them to produce more of their own arms or buy them abroad. At the same time, this rising affluence allowed several of these countries to rebuild their monetary reserves. Also, between FY 1957 and the end of FY 1961, the United States lost about \$5 billion of its gold holdings while its liquid liabilities to foreigners (which represent potential claims on our gold) had risen from about \$15 billion to about \$22 billion.

This increasing prosperity of many of our allies was reflected in our military assistance policies. Grant aid by FY 1961 had already declined

from an average annual level of \$2 billion-plus during the 1950's to about \$1.5 billion. Since FY 1961, this downward trend has continued with grant aid declining both absolutely and relatively. Whereas in FY 1961, there were two dollars of grant aid for every dollar of military sales to foreign recipients, by FY 1966 the ratio had been reversed. Moreover, I think it is important to note that, in terms of total value, U.S. military exports in the ten-year period, FY 1962-71, are not expected to be measurably higher than in the decade, FY 1952-61; the big change will be in the shift in the way these exports are financed—from grant aid in the 1950's to military sales in the 1960's.

With this shift in emphasis from grant aid to sales, it was decided to organize the latter on a more formal basis within the Department of Defense, indeed, to make it a separate program. The principal objective of this foreign military sales program is, however, basically the same as that of the grant aid program, i.e., to promote the defensive strength of our allies in a way consistent with our overall foreign policy objectives. Encompassed within this objective are several specific goals:

- To further the practice of cooperative logistics and standardization with our allies by integrating our supply systems to the maximum extent feasible and by helping to limit proliferation of different types of equipment.

- To reduce the costs, to both our allies and ourselves, of equipping our collective forces, by avoiding unnecessary and costly duplicative development programs and by realizing the economies possible from larger production runs.

- To offset, at least partially, the unfavorable payments impact of our deployments abroad in the interest of collective defense.

Three basic standards were established to govern the conduct of our foreign military sales program:

- We will not sell equipment to a foreign country which we believe it cannot afford or should not have.

- We will never ask a potential foreign customer to buy anything not truly needed by its own forces.

- We will not ask any foreign country to purchase anything from the United States, which it can buy cheaper or better elsewhere.

These standards are fully consistent with the spirit of the provision added to the Foreign Assistance Act last year, which calls for the sales program to be administered in such a way as to encourage reciprocal arms control and disarmament agreements and discourage arms races....

Over the next five years, we estimate that the countries of the non-communist world will have legitimate requirements for substantial amounts of new military equipment. Based on past experience, we believe that many of these requirements can be most effectively met by purchases from us. However, our ability to realize this potential will depend on one major condition: we must convince our allies that the U.S. military sales program is not a threat to their long-range national interests. And, as I mentioned previously, we must be willing, as a nation, to make military trade a "two way" street. For our part, the Defense Department will continue to take every opportunity to promote cooperative logistics arrangements—including cooperative research and development efforts—and to emphasize the important contribution which the sales program can make in furthering the objectives of collective defense.

Turning again to our international payments position, for the near term future, the prospects for any reduction in the net adverse balance on the "military" account must rest on an increase in sales receipts, and there are both practical and desirable limits as to how much relief we can or should expect from this source. In Europe, we should be able to make a net reduction in the size of our logistics support establishment in the process of relocating from France, although there will be some initial offsetting costs for the relocation itself. In the Far East, we will face continuing high foreign exchange costs as long as our Vietnam deployments remain large.

Let me assure the Committee, however, that despite our preoccupation with the important national security objective we are charged with accomplishing, we remain keenly aware of the burden that our overseas programs place on the nation's international balance of payments. In this regard, we have no intention of relaxing our efforts to make that burden as light as possible.

Strategic Forces

In this section of my statement I will discuss the three major programs which, together, constitute the foundation of our general nuclear forces, and civil defense. Because of their close inter-relationship and, indeed, their interaction, it is essential that all three of these programs be considered within a single analytical framework.

The General Nuclear War Problem

During the past several years, in my annual appearances before this committee, I have attempted to explore with you some of the more fundamental characteristics of the general nuclear war problem and the kinds of strategic forces which it involves. I noted that our general nuclear war forces should have two basic capabilities:

- To deter deliberate nuclear attack upon the United States and its allies by maintaining, continuously, a highly reliable ability to inflict an unacceptable degree of damage upon any single aggressor, or combination of aggressors, at any time during the course of a strategic nuclear exchange, even after absorbing a surprise first strike.

- In the event such a war nevertheless occurred, to limit damage to our population and industrial capacity.

The first capability we call "Assured Destruction" and the second "Damage Limitation." The strategic offensive forces—the ICBM's, the submarine-launched ballistic missiles (SLBM's), and the manned bombers—which we usually associate with the first capability, can also contribute to the second. They can do so by attacking enemy delivery vehicles on their bases or launch sites, provided they can reach those vehicles before they are launched at our cities. Conversely, the strategic defensive forces—manned interceptors, anti-bomber surface-to-air missiles, anti-ballistic missile (ABM)—which we usually associate with the second capability can also contribute to the first. They can do so by successfully intercepting and destroying the enemy's offensive

weapons before they reach our strategic offensive forces on their bases and launch sites.

As long as deterrence of a deliberate Soviet (or Red Chinese) nuclear attack upon the United States or its allies is the overriding objective of our strategic forces, the capability for Assured Destruction must receive the first call on all of our resources and must be provided regardless of the costs and the difficulties involved. Damage Limiting programs, no matter how much we spend on them, can never substitute for an Assured Destruction capability in the deterrent role. It is our ability to destroy an attacker as a viable 20th Century nation that provides the deterrent, not our ability to partially limit damage to ourselves.

What kind and amount of destruction we would have to be able to inflict on an attacker to provide this deterrent cannot be answered precisely. However, it seems reasonable to assume that in the case of the Soviet Union, the destruction of, say, one-fifth to one-fourth of its population and one-half to two-thirds of its industrial capacity would mean its elimination as a major power for many years. Such a level of destruction would certainly represent intolerable punishment to any industrialized nation and, thus, should serve as an effective deterrent to the deliberate initiation of a nuclear attack on the United States or its allies.

Assured Destruction with regard to Red China presents a somewhat different problem. China is far from being an industrialized nation. However, what industry it has is heavily concentrated in a comparatively few cities. We estimate, for example, that a relatively small number of warheads detonated over 50 Chinese urban centers would destroy half of the urban population (more than 50 million people) and more than one-half of the industrial capacity. Moreover, such an attack would also destroy most of the key governmental, technical and managerial personnel and a large proportion of the skilled workers. Since Red China's capacity to attack the United States with nuclear

weapons will be very limited, even during the 1970's, the ability of even a very small portion of our strategic offensive forces to inflict such heavy damage upon them should serve as an effective deterrent to the deliberate initiation of such an attack on their part.

Once sufficient forces have been procured to give us high confidence of achieving our Assured Destruction objective, we can then consider the kinds and amounts of forces which might be added to reduce damage to our population and industry in the event deterrence fails. But here we must note another important point, namely, the possible interaction of our strategic forces programs with those of the Soviet Union. If the general nuclear war policy of the Soviet Union also has as its objective the deterrence of a U. S. first strike (which I believe to be the case), then we must assume that any attempt on our part to reduce damage to ourselves (to what they would estimate we might consider an "acceptable level") would put pressure on them to strive for an offsetting improvement in their deterrent forces. Conversely, an increase in their Damage Limiting capability would require us to make greater investments in Assured Destruction, which, as I will describe later, is precisely what we now propose to do.

It is this interaction between our strategic forces programs and those of the Soviet Union which leads us to believe that there is a mutuality of interests in limiting the deployment of anti-ballistic missile defense systems. If our assumption that the Soviets are also striving to achieve an Assured Destruction capability is correct, and I am convinced that it is, then in all probability all we would accomplish by deploying ABM systems against one another would be to increase greatly our respective defense expenditures, without any gain in real security for either side. It was for this reason that President Johnson decided to initiate negotiations with the Soviet Union, designed, through formal or informal agreement, to limit the deployment of ABM systems, while including at the same time about \$375 million in his FY 1968 Budget to provide for such actions—e.g., protection of our offensive weapon systems—as may be required if these discussions prove unsuccessful.

In this connection, it might be useful to reiterate another fundamental point, namely, that the concept of Assured Destruction implies a "second strike" capability, i.e., a strategic force of such size and sufficient strength to destroy the attacker. Thus, if Assured Destruction is also a Soviet objective, they must always view our strategic offensive forces in their planning as a potential first strike threat (just as we view their forces) and provide for a second strike capability.

The Size and Character of the Threat

In order to assess the capabilities of our general nuclear war forces over the next several years, we must take into account the size and character of the strategic forces which the Soviet Union and Red China are likely to have during the same period. Again, let me caution that, while we have reasonable high confidence in our estimates for the close-in period, our estimates for the early part of the next decade are subject to much uncertainty. As I pointed out in past appearances before this Committee, such longer range projections are, at best, only informed estimates, particularly since they deal in many cases with a period beyond the production and deployment lead times of the weapon systems involved.

The Soviet Strategic Offensive-Defensive Forces.

Two significant changes have occurred during the last year in our projections of Soviet strategic forces. The first is a faster-than-expected rate of construction of hard ICBM silos; the second is more positive evidence of a deployment of an anti-ballistic missile defense system around Moscow. (Both of these developments fall considerably short of what we assumed in the "higher-than-expected" threat, against which we have been hedging for several years.) Our current estimates for other elements of the Soviet strategic forces are generally in line with those I discussed here last year.

Summarized in the following table are the Soviet's strategic offensive forces estimated for Oct. 1, 1966. Shown for comparison are the U. S. forces.

U.S. vs Soviet Intercontinental Strategic Nuclear Forces		
	Oct. 1, 1966	
	U. S. ^a	USSR
ICBM's ^b -----	934	340
SLBM's (U.E. Launchers) ^c -----	512	130
Total Intercontinental Ballistic Missiles ^d --	1,446	470
Intercontinental Bombers ^e -----	680	155

Intercontinental Ballistic Missiles. As of now, we have more than three times the number of intercontinental ballistic missiles (i.e., ICBM's, and SLBM's) the Soviets have. Even by the early 1970's, we still expect to have a significant lead over the Soviet Union in terms of numbers and a very substantial superiority in terms of overall combat effectiveness. In this connection, we should bear in mind that it is not the number of missiles which is important, but rather the character of the payloads they carry; the missile is simply the delivery vehicle. Our superiority in intercontinental bombers, both in numbers and combat effectiveness, is even greater and is expected to remain so for as far ahead as we can see. There is still no evidence that the Soviets intend to deploy a new heavy bomber in the late 1960's.

Anti-Ballistic Missile Defense. We have been aware for many years that the Soviets have been working on an anti-ballistic missile defense system, just as we have been. After a series of abortive starts, it now appears that the Soviets are deploying such a system (using the "GALOSH" missile, publicly displayed in 1964) around Moscow. They are also deploying another type of defensive system elsewhere in the Soviet Union, but the weight of the evidence at this time suggests that this system is not intended primarily for anti-ballistic

^a These are mid-1966 figures.

^b Excludes test range launchers and Soviet MR/IRBM's capable of striking Eurasian targets.

^c In addition to the SLBM's, the Soviets possess submarine-launched cruise missiles whose primary targets are naval and merchant vessels.

^d In 1965, intelligence reports estimated Soviet intercontinental missiles as of mid-1966 to number between 430 and 500.

^e In addition to the intercontinental bombers shown in the table, the Soviets possess medium bombers capable of striking Eurasian targets.

missile defense. However, knowing what we do about past Soviet predictions for defense systems,^f we must, for the time being, plan our forces on the assumption that they will have deployed some sort of an ABM system around their major cities by the early 1970's. Whether made up of GALOSH only, or a combination of GALOSH and other types of missiles, a full scale deployment would cost the Soviet Union at least \$20 to \$25 billion.

The Red Chinese Nuclear Threat.

There has been no basic change in in our estimates of the Red Chinese nuclear threat. Their firing of a nuclear armed missile over a distance of a few hundred miles last October falls within the limits of that estimate. . . .

With regard to an ICBM, we believe that the Red Chinese nuclear weapons and ballistic missile development programs are being pursued with high priority. On the basis of recent evidence, it appears possible that they may conduct either a space or a long-range ballistic missile launching before the end of 1967. However, it appears unlikely that the Chinese could deploy a significant number of operational ICBM's before the mid-1970's, or that those ICBM's would have great reliability, speed of response, or substantial protection against attack.

Red China also has some bombers which could carry nuclear weapons, but most of them have an operational radius of only a few hundred miles. It is highly unlikely, on the basis of cost alone, that they would undertake the development, production and deployment of a new, long range bomber force. If they chose to do so, it would take them a decade or more before they could deploy it. Accordingly, we have no reason on this account to change our estimate that a significant Red Chinese nuclear threat to the continental United States will not develop before the mid-1970's.

^f The Soviets for more than a decade have spent substantially more on air defense against strategic bombers than has the United States. But if our Strategic Air Command is correct in its judgment that a very high proportion of the U. S. incoming bombers could penetrate the Soviet defenses and reach their targets, and I have no reason to dispute it, then we must conclude that the bulk of these Soviet expenditures has been wasted.

Capabilities of the Proposed Forces for Assured Destruction

The most demanding test of our Assured Destruction capability is the ability of our strategic offensive forces to survive a well coordinated surprise Soviet first strike directed against them. Because no one can know how a general nuclear war between the United States and the Soviet Union might occur, prudence dictates that we design our own strategic forces on the basis of a greater threat than we actually expect.

Capability Against the Expected Threat.

Even if the Soviets in the 1972 period were to assign their entire available missile force to attacks on our strategic forces (reserving only refire missile and bomber-delivered weapons for urban targets), more than one-half of the total forces programmed last year for 1972 would still survive and remain effective.

Considering the overall size and character of that force, it is clear that our strategic missiles alone could destroy the Soviet Union as a viable 20th Century society, even after absorbing a well coordinated, surprise first attack. Indeed, the detonation of even one-fifth of the total surviving weapons over Soviet cities would kill about 30 percent of the total population (73 million people) and destroy about one-half of the industrial capacity. By doubling the number of warheads delivered, Soviet fatalities and industrial capacity destroyed would be increased by considerably less than one-third. Beyond this point further increments of warheads delivered would not appreciably change the result, because we would have to bring smaller and smaller cities under attack, each requiring one delivered warhead.

Although it is not at all certain that they will do so, we must, as I noted earlier, base our force planning on the assumption that the Soviets will deploy a reasonably effective ABM defense around their principal cities; and we must be prepared to overwhelm it.

We have been hedging against this possibility for some time, and last year we took a number of actions of which the following are the most important:

- Accelerated development of the Poseidon missile.
- Approved production and deployment of Minuteman III.
- Developed penetration aids for Minuteman.

Now, in the FY 1968 program we propose to take a number of additional actions to enhance the future capabilities of our Assured Destruction forces, of which the following are the more important:

- Produce and deploy the Poseidon missile.
- Produce and deploy improved missile penetration aids.
- Increase the proportion of Minuteman III in the planned force and provide it with an improved third stage.
- Initiate the development of new reentry vehicles, specifically designed for use against targets heavily defended with ABM's.

I will discuss each of these actions in greater detail later in connection with our other proposals for the strategic forces. But for now, let me point out that the net effect of these actions would be to increase greatly the overall effectiveness of our Assured Destruction force against the Soviet Union by mid-1972. Even if the Moscow-type ABM defense were deployed at other cities as well, the proposed U.S. missile force alone could inflict about 35 percent (86 million) fatalities on the Soviet Union in 1972—after absorbing a surprise attack.

As I noted earlier, a relatively small number of warheads detonated over fifty cities would destroy half of Red China's urban population and more than one-half of her industry.

Thus the strategic missile forces proposed for the FY 1968-72 period would, by themselves, give us an Assured Destruction capability against both the Soviet Union and Red China, simultaneously.

Capability Against "Higher-Than-Expected Threats."

As I indicated last year, our Assured Destruction capability is of such crucial importance to our security that we must be prepared to cope with Soviet strategic threats which are greater than those projected in the latest intelligence estimates.

The most severe threat we must consider in planning our Assured Destruction forces is an extensive, effective Soviet ABM deployment com-

bined with a deployment of a substantial ICBM force with a hard-target kill capability. Such a Soviet offensive force might pose a threat to our Minuteman missiles. An extensive, effective Soviet ABM system might then be able to intercept and destroy a significant portion of our residual missile warheads, including those carried by submarine-launched missiles. (The Soviet offensive and defensive threats assumed here are both substantially higher than expected.)

To hedge against the possibility of such a threat to our land-based missile forces, we have authorized the development and production of the Poseidon. Should still additional offensive power be required, and such a requirement is not now clear, we are considering the development and deployment of a new Advanced ICBM, designed to reduce vulnerability to such a Soviet threat. The deployment of the Nike-X as a defense for our Minuteman force would offer a partial substitute for the possible further expansion of our offensive forces.

But again I want to emphasize that we don't know whether the Soviet Union will develop and deploy the kind of forces assumed here. Even against this higher-than-expected threat, and even without a Nike-X defense of Minuteman, our proposed strategic missile and bomber forces could still inflict 40 percent or more fatalities on the Soviet population throughout the time period involved.

More extreme threats are highly unlikely. In any event, the changes we are now proposing in our strategic offensive forces would make it dangerous and expensive for the Soviet Union to move in the direction of more extreme threats to our Assured Destruction capability. If we assume, as I believe we should, that the Soviets would want to reduce the vulnerability of their own offensive forces against the possibility of a first strike by our very accurate forces in the FY 1972-73 period, they must further disperse and harden their strategic missiles, which is exactly what they appear to be doing now. To do so is expensive and for the same budget outlay results in reduced missile payloads. Not to do so would leave the Soviet force highly vulnerable. Thus we can, in planning our forces, foreclose any seemingly "easy" and "cheap" paths to their

achievement of a satisfactory Assured Destruction capability and a satisfactory Damage Limiting capability at the same time.

We, of course, cannot preclude the possibility that the Soviet Union may increase its strategic forces budget at some time in the future. That is why we are now undertaking a very comprehensive study of a new strategic missile system. And that is why we are not precluding the possible future construction of new Poseidon submarines or the defense of our presently deployed Minuteman silos with Nike-X. While I believe we should place ourselves in a position to move forward promptly on all of these options if later that should become necessary, we need not commit ourselves to them now.

Capabilities of the Proposed Forces for Damage Limitation

The principal issue in this area of the Strategic Forces Program concerns the deployment of an ABM defense system, i.e., Nike-X. There are three somewhat overlapping but distinct major purposes for which we might want to deploy such a system at this time:

- To protect our cities (and their population and industry) against a Soviet missile attack.
- To protect our cities against a Red Chinese missile attack in the mid-1970's.
- To help protect our land-based strategic offensive forces (i.e., Minuteman) against a Soviet missile attack.

After studying the subject exhaustively, and after hearing the views of our principal military and civilian advisors, we concluded that we should not initiate an ABM deployment at this time for any of these purposes. We believe that:

- The Soviet Union would be forced to react to a U.S. ABM deployment by increasing its offensive nuclear force still further with the result that the risk of a Soviet nuclear attack on the United States would not be further decreased; and the damage to the United States from a Soviet nuclear attack, in the event deterrence failed, would not be reduced in any meaningful sense.

As I noted earlier, the foundation of our security is the deterrence of a Soviet nuclear attack. We believe

such an attack can be prevented if it is understood by the Soviets that we possess strategic nuclear forces so powerful as to be capable of absorbing a Soviet first strike and surviving with sufficient strength to impose unacceptable damage on them. We have such power today. We must maintain it in the future, adjusting our forces to offset actual or potential changes in theirs.

There is nothing we have seen in either our own or the Soviet Union's technology which would lead us to believe we cannot do this. From the beginning of the Nike-Zeus project in 1955 through the end of this current fiscal year, we will have invested a total of about \$4 billion on ballistic missile defense research—including Nike-Zeus, Nike-X and Project Defender. And, during the last five or six years, we have spent about \$1.2 billion on the development of penetration aids to help ensure that our missiles could penetrate the enemy's defenses. As a result of these efforts, we have the technology already in hand to counter any offensive or defensive force changes the Soviet Union might undertake in the foreseeable future.

We believe the Soviet Union has essentially the same requirement for a deterrent or Assured Destruction force as the United States. Therefore, deployment by the United States of an ABM defense which would degrade the destruction capability of the Soviet's offensive force to an unacceptable level would lead to expansion of that force. This would leave us no better off than we were before.

- With respect to protection of the United States against a possible Red Chinese nuclear attack, the lead time required for China to develop a significant ICBM force is greater than that required for deployment of our defense—therefore the Chinese threat in itself would not dictate the production of an ABM system at this time.

- Similarly, although the protection of our land-based strategic offensive forces against the kind of heavy, sophisticated missile attack the Soviets may be able to mount in the mid- or late 1970's might later prove to be worthwhile, it is not yet necessary to produce and deploy the Nike-X for that purpose.

I have already discussed, in connection with my review of the capabilities of our strategic forces for

Assured Destruction, the third major purpose for which we may want to deploy an ABM defense (i.e., the protection of Minuteman). Now, I would like to discuss the other two purposes.

Deployment of Nike-X for Defense of Our Cities Against a Soviet Attack.

What is involved here is an analysis of the contribution the Nike-X system might make to the defense of our cities under two assumptions:

- That the Soviets do not react to such a deployment.
- That the Soviets do react in an attempt to preserve their "Assured Destruction" capability.

As you know, the major elements of the Nike-X system are being developed in such a way as to permit a variety of deployments; two have been selected for the purposes of this analysis. The first, which I will call "Posture A," represents a light U. S. defense against a Soviet missile attack on our cities. It consists of an area defense of the entire continental United States, providing redundant (overlapping) coverage of key target areas; and, in addition, a relatively low-density Sprint defense of a number of the largest cities to provide some protection against those warheads which get through the area defense. The second deployment, which I call "Posture B," is a heavier defense against a Soviet attack. With the same area coverage, it provides a higher-density Sprint defense for twice the number of cities.

Shown on the Figure 1 are the components and the costs (which, if past experience is any guide, may be understated by 50 to 100 percent for the systems as a whole)⁶ of Posture A and Posture B.

⁶ Even before the systems became operational, pressures would mount for their expansion at a cost of still additional billions. The unprotected, or relatively unprotected, areas of the United States would claim that their tax dollars were being diverted to protect New York and Washington while they were left naked. And, critics would point out that our strategic offensive force is premised on a much larger Soviet threat (the "possible," not the "probable" threat); they would conclude that the same principles should be applied to our strategic defensive forces. For these and other reasons, I believe that, once started, an ABM system deployed with the objective of protecting the United States against the Soviet Union would require an expenditure on the order of \$40 billion over a 10-year period.

The Multi-function Array Radar (MAR) is a very powerful phased-array radar which can perform all the defense functions involved in engaging a large, sophisticated attack: central control and battle management, long-range search, acquisition of the target, discrimination of warheads from decoys or "spoofing" devices, precision tracking of the target, and control of the defense interceptor missiles.

The TACMAR Radar is a scaled down, slightly less complex and less powerful version of the MAR, which can perform all the basic defense functions in a smaller, less sophisticated attack.

The Perimeter Acquisition Radar (PAR) is a phased-array radar required for the very long-range search and acquisition functions involved in area defense. To achieve the full potential of the extended range Spartan, the target must be picked up at much greater distances in order to compute its trajectory before the Spartan is fired.

The Missile Site Radar (MSR) is a much smaller, phased-array radar needed to control the Sprint and Spartan interceptor missiles during an engagement. It can also perform the functions of the TACMAR but on a considerably reduced scale. Actually, a number of different sizes are being studied. This "modular" approach will permit us to tailor the capacity of the radar to the particular needs of each defended area.

The Spartan is a three-stage missile with a nuclear warhead capable of intercepting incoming objects at relatively long range above the atmosphere.

The Sprint is a shorter range, high-acceleration interceptor missile designed to make intercepts at lower altitudes.

The technical principles involved in the radars are now fairly well established. One research and development MAR-type has been constructed at the White Sands Missile Range. A contract has been let for the power plant of a second MAR-type radar, which is to be constructed on Kwajalein Atoll. The Missile Site Radar is well along in development and the construction of one of these radars on Kwajalein Atoll has also begun.

Testing of the Sprint missile was started at White Sands in November 1965 and the tempo of testing will steadily increase during the current year. The Spartan is still on the drawing boards. It represents a very substantial redesign of the original Zeus and we will not know until it is flight tested how well it will perform.

Facilities for testing both the Sprint and the Spartan will be constructed on Kwajalein Atoll. These, together with the TACMAR and MSR and the programs for the computers, will give us all of the major elements of the Nike-X system which are essential to test its overall performance against reentry vehicles fired from Vandenberg AFB, Calif. (We feel we know enough about the PAR technology to

be able to use the mechanically steered radars already on Kwajalein as simulators.) The system will be tested in stages, starting with the MSR and Sprint, then the Spartan missile and the TACMAR radar. A large number of test shots will be launched from the west coast of the United States to Kwajalein to test the system thoroughly as a whole. The most important objective of this effort is to determine proper system integration and computer programming, since the individual components of the system will have already been tested.

But even after this elaborate test program is completed, some technical uncertainties will still remain unresolved; this is to be expected in a system designed for such a highly complex mission. Moreover, we have learned from bitter experience that even when the development problems have been solved, a system can run into trouble in production or when it is put into operation. All too often the development prototype cannot be produced in quantity without extensive re-engineering. Production delays are encountered and costs begin to spiral. Sometimes these problems are not discovered until the new system actually enters the inventory and has to function in an operational environment. . . .

In this connection, it is worth noting that had we produced and deployed the Nike-Zeus system proposed by the Army in 1959 at an estimated cost of \$13 to \$14 billion, most of it would have had to be torn out and replaced, almost before it became operational, by the new missiles and radars of the Nike-X system. By the same token, other technological developments in offensive forces over the next seven years may make obsolete or drastically degrade the Nike-X system as presently envisioned. We can predict with certainty that there will be substantial additional costs for updating any system we might consider installing at this time against the Soviet missile threat.

The deployment of a Nike-X system would also require some improvement in our defense against manned bomber attack in order to preclude the Soviets from undercutting the Nike-X defense; and we would want to expand and accelerate the fallout shelter program. The investment cost (including research and development)

	POSTURE A Invest. Cost (\$ Billion)	POSTURE B Invest. Cost (\$ Billion)
Radars		
MAR		
TACMAR		
PAR		
MSR		
Invest. Cost	\$ 6.5	\$12.6
Missiles		
Spartan		
Sprint		
Invest. Cost	\$ 2.4	\$ 4.8
DOD Invest. Cost	\$ 8.9	\$17.4
AEC Invest. Cost	1.0	2.0
Total Invest. Cost (excluding R&D)	\$ 9.9	\$19.4
Annual Operating Cost	\$ 0.38	\$ 0.72
No. of Cities w/Term. Def:	X	2X

Figure 1

of the former is estimated at about \$1.5 to \$2.4 billion and would provide for a small force of F-111 or F-12 type interceptors and airborne warning and control aircraft (AWACS). The expanded fallout shelter program would cost about \$800 million more than the one we are now producing. We would also need some of our anti-submarine warfare (ASW) forces for use against Soviet missile submarines, but we are not yet clear whether these ASW forces would actually have to be increased over the currently planned levels. In any event, the "current" estimates of the investment cost of the total Damage Limiting package would amount to at least \$12.2 billion for Posture A and at least \$21.7 billion for Posture B.

To test the contribution that each of these Nike-X deployments might make to our Damage Limiting objectives, we have projected both the U.S. and Soviet strategic nuclear forces (assuming no reaction by the Soviets to the U.S. ABM deployment) to the time when Posture B, the heavier defense, could be fully in place.

The fatalities which these Soviet forces could inflict upon the United States (with and without a U.S. ABM defense) and the fatalities which the U. S. forces could inflict on the Soviet Union (with a Soviet ABM defense) are shown in the Figure 2.

The first case, "Soviets Strike First, U. S. Retaliates," is the threat against which our strategic forces must be designed. The second case, "U.S. Strikes First, Soviets Retaliate," is the case that would determine the size and character of the Soviet reaction to changes in our strategic forces, if they wish, as they clearly do, to maintain an Assured Destruction capability against us.

These calculations indicate that without Nike-X and the other Damage Limiting programs discussed earlier, U.S. fatalities from a Soviet first strike could total about 120 million; even after absorbing that attack, we could inflict on the Soviet Union more than 120 million fatalities. Assuming the Soviets do not react to our deployment of an ABM defense against them, which is a most unrealistic assumption, Posture A might reduce our fatalities to 40 million and Posture B to about 30 million.

Although the fatality estimates shown for both the Soviet Union and

the United States reflect some variations in the performance of their respective ABM systems, they are still based on the assumption that these systems will work at relatively high levels of effectiveness. If these ABM systems do not perform as well as our technical people postulate, fatalities on both sides could be considerably higher than shown in Figure 2, or the costs would be considerably higher if major improvements or additions had to be made in the systems to bring them up to the postulated level of performance.

If the Soviets are determined to maintain an Assured Destruction capability against us and they believe that our deployment of an ABM defense would reduce our fatalities in the "U.S. Strikes First, Soviets Retaliate" case to the levels shown in Figure 2, they would have no alternative but to increase the second strike damage potential of their offensive forces. They could do so in several different ways. Shown in the table below are the relative costs to the Soviet Union of responding to a U.S. ABM deployment in one of these possible ways:

Level of U.S. Fatalities Which Soviets Believe Will Provide Deterrence ^b (Millions)	Cost to the Soviets of Offsetting U.S. Cost to Deploy an ABM
40-----	\$1 Soviet cost to \$4 U.S. cost
60-----	\$1 Soviet cost to \$2 U.S. cost
90-----	\$1 Soviet cost to \$1 U.S. cost

^b U. S. fatalities if United States strikes first and Soviets retaliate.

If the Soviets chose to respond in that way to our ABM deployment, the results would be as shown in Figure 3.

In short, the Soviets have it within their technical and economic capacity to offset any further Damage Limiting measures we might undertake, provided they are determined to maintain their deterrent against us. It is the virtual certainty that the Soviets will act to maintain their deterrent which casts such grave doubts on the advisability of our deploying the Nike-X system for the protection of our cities against the kind of heavy, sophisticated missile attack they could launch in the 1970's. In all probability, all we would accomplish would be to increase greatly both their defense expenditures and ours without any gain in real security to either side.

Defense Against the Red Chinese Nuclear Threat.

With regard to the Red Chinese nuclear threat, an austere ABM defense might offer a high degree of protection to the nation against a missile attack, at least through the 1970's. The total investment cost of such a program might amount to \$3.5 billion, including the cost of the nuclear warheads.

The effectiveness of this deployment in reducing U. S. fatalities from a Red Chinese attack in the 1970's is shown in the table below:

Chinese Strike First (Operational Inventory)		
U.S. Fatalities X Missiles (in millions)	3X Missiles	5X Missiles
Without ABM	5	10
With ABM	0+	1

Number of Fatalities^a in an All-Out Strategic Exchange (in millions)^b (ASSUMES NO SOVIET REACTION TO U.S. ABM DEPLOYMENT)

U.S. Programs	Soviets Strike First, U.S. Retaliates		U.S. Strikes First, Soviets Retaliate ^c	
	U.S. Fat.	Sov. Fat.	U.S. Fat.	Sov. Fat.
Approved	120	120+	100	70
Posture A	40	120+	30	70
Posture B	30	120+	20	70

^a Fatality figures shown above represent deaths from blast and fallout; they do not include deaths resulting from fire storms, disease, and general disruption of everyday life.

^b The data in this table are highly sensitive to small changes in the pattern of attack and small changes in force levels.

^c Assumes United States minimizes U. S. fatalities by maximizing effectiveness of strike on Soviet offensive systems.

Figure 2

This austere defense could probably preclude damage in the 1970's almost entirely. As the Chinese force grows to the level it might achieve by 1980-85, additions and improvements might be required, but relatively modest additional outlays could probably limit the Chinese damage potential to low levels well beyond 1985.

It is not clear that we need an ABM defense against China. In any event, the lead time for deployment of a significant Chinese offensive force is longer than that required for U.S. ABM deployment; therefore, the decision for the latter need not be made now.

In the light of the foregoing analysis, we propose:

- To pursue with undiminished vigor the development, test and evaluation of the Nike-X system (for which purpose a total of about \$440 million has been included in the FY 1968 Budget), but to take no action now to deploy the system.

- To initiate negotiations with the Soviet Union designed, through formal or informal agreement, to limit the deployment of ABM systems.

- To reconsider the deployment decision in the event these discussions prove unsuccessful; approximately \$375 million has been included in the FY 1968 Budget to provide for such actions as may be required at that time, e.g., the production of Nike-X for the defense of our offensive weapon systems.

I would now like to turn to our specific proposals for the Strategic Forces in the FY 1968-72 period.

Strategic Offensive Forces

The force structure proposed for the FY 1968-72 period is shown in the classified table furnished to the Committee.

Missile Forces.

Last year I told this Committee that:

"The U.S. response to a Soviet deployment of an ABM defense would be the incorporation of appropriate penetration aids in our strategic missiles. Against area defense interceptors, penetration aids can be provided for U.S. missiles (so that an Assured Destruction capability is maintained) at a cost to us of less than 10 percent of the cost of an ABM defense to the Soviets. The lead time for the Soviets to mount an ABM defense is greater than the time for us to produce and deploy penetration aids, provided we take timely action to develop them and can move forward promptly to produce them, and this we are doing. The decision actually to deploy new penetration aids can be made later this year. If the Soviets did attempt a large ABM defense we would still be able to produce and install the necessary penetration aids before the Soviets could achieve an extensive deployment.

"... against a combined Soviet expanded strategic missile/ABM threat, the most efficient alternative available to us would be to develop Poseidon (with the new penetration aids) and retrofit it into Polaris boats. To hedge against the possibility of such a threat, we now propose to accelerate the development of the Poseidon missile (which was initiated last year). The timing of a decision to produce and deploy the missile would depend upon how this threat actually evolved."

This is essentially the program we now propose to pursue.

Minuteman. Last year we had planned a Minuteman force which would ultimately have consisted of a mix of 1,000 Minuteman II's and Minuteman III's, with all the Minuteman I's phased out. Now, in order to increase the capability of this force against a possible strong Soviet ABM defense, we propose to increase the proportion of Minuteman III's in the force and equip them with a new improved third stage which will increase the payload of each missile. This increased payload will enable the Minuteman III to carry more penetration aids to counter an ABM defense. The total cost of this program is estimated at \$400 million, but it will cost the Soviet Union many times more in ABM defenses if they try to offset it.

We also propose to step up the schedule for re-equipping the Minuteman II's with an improved reentry vehicle and to procure penetration aid packages for all Minuteman II and III missiles. Engineering development was started on these penetration aid packages last year. The total cost of this program is estimated at \$315 million, of which \$100 million was provided through FY 1967, \$125 million is required in FY 1968, and another \$90 million in subsequent years.

Eventually, it will probably become necessary to replace the earliest Minuteman II missiles because of their age. At that time we could add more Minuteman III's if that should appear desirable. Meanwhile, I believe we should initiate the development of a new improved reentry vehicle for the Minuteman III, and funds for this purpose have been included in the budget request.

Polaris-Poseidon. By the end of the current fiscal year, 39 of the planned 41-ship Polaris force will have become operational. The last two Polaris submarines will be deployed by September 1967. . . .

I also believe it would be prudent at this time to commit the Poseidon missile to production and deployment. . . . In order to hold a minimum the number of submarines which would have to be withdrawn from the operational fleet, we propose to spread the Poseidon retrofit program over a period of years on a schedule tied to the regular overhaul cycle.

. . . The total incremental cost of developing Poseidon, and producing

Number of Fatalities in an All-Out Strategic Exchange (in millions) (ASSUMES SOVIET REACTION TO U.S. ABM DEPLOYMENT)

U.S. Programs	Soviets Strike First, U.S. Retaliates		U.S. Strikes First, Soviets Retaliate	
	U.S. Fat.	Sov. Fat.	U.S. Fat.	Sov. Fat.
Approved (no response)	120	120+	100	70
Posture A	120	120+	90	70
Posture B	120	120+	90	70

Figure 3

and deploying the proposed force is estimated at \$3.3 billion. A total of about \$900 million is included in the FY 1968 Budget for Poseidon. (The decision to deploy Poseidon will produce an offsetting saving of about \$200 million in the Polaris program.)

Funds have also been included in the budget for the development of certain desired improvements for the Polaris missile.

Titan II. The Titan II force, consisting of 54 missiles deployed in hard silos, presently makes a unique contribution to our strategic offensive capabilities. . . . However, with the deployment of Minuteman III and, later, of the Poseidon, this capability of the Titan II will no longer be unique. The Minuteman III from the continental United States and the Poseidon from forward undersea locations will be able to reach all the important targets in the Soviet Union.

. . . Accordingly, we now propose to end procurement of new Titan boosters for testing and operational reliability demonstration with the FY 1966 buy, and, instead, use boosters already in the inventory for these purposes in the future. With about six follow-on tests per year, the force of 54 TITAN missiles on launchers can be maintained for a number of years.

New Strategic Missile Systems. Although we believe the strategic missile programs now proposed will be adequate to meet the threat, even if the Soviet Union were to carry out a full scale deployment of an ABM system and develop more effective ICBM's, we are making a very comprehensive study of a new long-range missile system. To shorten the lead time on any option selected as a result of this study, we have included funds in the FY 1968 Budget for contract definition should such a decision become warranted.

Strategic Bomber Forces.

The manned bomber forces we propose to maintain through FY 1972 are the same as those I presented here last year for the FY 1967-71 period. The B-52C-F's and B-58's will be phased out as planned, leaving a force of 255 B-52G-H's and 210 FB-111A's.

Since the new FB-111's with the SRAM air-to-surface missile will be

entering the bomber force during FY 1969-71 and the B-52G/H's can be maintained in a suitable operational condition well into the 1970's, there is no pressing need to decide on the production and deployment of a new bomber in the FY 1968 Budget. Clearly, the first order of business in the strategic offensive forces program at this time is the provision of penetration aids and other improvements for our presently planned strategic missile force, and the production and deployment of the new Poseidon. . . . Nevertheless, we plan to continue work on the engine, avionics, and the related airframe studies, for which a total of \$26 million is programmed for FY 1968.

Air Launched Missiles.

Last year I said that we planned to keep the Hound Dog missiles in the operational inventory through FY 1970, phasing their number down in step with the phase out of the B-52C-F's. We now propose to phase out the older Hound Dog "A" by end FY 1968, retaining only the "B" models. . . .

The SRAM program is unchanged from that which I presented last year. While we still do not plan to deploy SRAM on the B-52G/H's, we are continuing the development of the necessary avionics to permit such a deployment if it should become desirable.

Strategic Reconnaissance.

The strategic reconnaissance force is the same as that presented a year ago.

Strategic Defensive Forces

The strategic defensive forces proposed for the FY 1968-72 period are shown on the classified table provided to the Committee. The Civil Defense program for FY 1968 is shown separately.

Surveillance, Warning and Control.

The programs shown under this heading are, with two exceptions, the same as those I presented last year. Activation of BUIC III control centers will slip somewhat from the schedule shown last year due to delays in firming up the technical details of the program. The delay will be made up by the temporary retention of two of the BUIC II control centers and 12 of the manual backup

centers through FY 1968. By end FY 1969 all 19 BUIC III's should be operational and the remaining BUIC II and manual control centers will be phased out.

The second change pertains to the search radars. Last year we had planned to reduce the number of these radars to 151 by end FY 1967. As you may recall, this reduction was predicated on the internetting of our radar system with that of the Federal Aviation Agency (FAA). However, in order to make the inputs from the FAA radars compatible with the SAGE-BUIC III system, they must first be converted into appropriate computer language by a special piece of equipment called a "digitizer." Because of a slippage in the production of this digitizer, five more Defense Department radars will have to be operated until FY 1969, when we expect to be able to reduce the number to 149. . . .

Manned Interceptors.

The manned interceptor forces are generally the same as those presented last year.

As you know, we have been studying during the past several years various ways of modernizing our air defense forces. Interceptor versions of both the SR-71 (F-12) and the F-111 have been considered for this role. Either one, equipped with the improved ASG-18/AIM 47 fire control and missile system and used with an effective Airborne Warning and Control System (AWACS), would be better than the present interceptors in operating from degraded bases and independently of the vulnerable fixed ground environment, and in countering concentrated bomber attacks, including air-to-surface missiles. In fact, a small force of such aircraft operating with AWACS would have a combat capability superior to the programmed force of several hundred Century series fighters and the hundreds of ground radar and control sites.

The feasibility of this plan, however, depends upon the successful development of the AWACS. We now have a test program under way to examine three proposed solutions to the problem of developing an overland airborne radar which could provide effective coverage at all altitudes. Design efforts are also being pursued on the airframe and

avionics. We hope that by the end of this year sufficient data will be available to demonstrate the feasibility of the AWACS. Only then will we be in a position to make a decision on the interceptor force. Accordingly, we propose to continue development work on both the F-12 and the F-111 types of interceptors and on the fire control and missile systems, and \$20 million is included in the FY 1968 Budget for this purpose. Although no additional funds are requested for work on the AWACS airframe, another \$10 million is included in the FY 1968 Budget to continue work on overland radar technology.

Surface-to-Air Missiles

The Nike Hercules and Hawk missile forces are the same as planned a year ago except that we now intend to replace eventually some of the present Hawk missiles with the new Improved Hawk which is now in development.

In addition to the Improved Hawk, which is designed primarily for the field forces, we also have in advanced development a new surface-to-air missile called the SAM-D. While this system is also primarily oriented toward air defense of the field forces, it also has a potential application for continental air defense. This effort, thus far, has been directed mainly to development of the required components or "building blocks" and a deployment decision at this time would be premature. Additional funds have been included in the FY 1968 Budget to continue development.

Ballistic Missile Warning.

The numbers of Ballistic Missile Early Warning Systems (BMEWS) and Over-the-Horizon (OTH) radar sites are the same as shown last year. . . .

We are also continuing work on "back scatter" Over-the-Horizon radars. . . .

An interim capability to detect sea launched ballistic missiles (SLBM's) is being phased in during FY 1968. The SLBM detection system will include modified SAGE and SPACE-TRACK radars.

Anti-Satellite Defense.

As described in previous years, we have a capability to intercept and destroy hostile satellites within certain ranges. This capability will be maintained through FY 1968.

Civil Defense

The Civil Defense program proposed for FY 1968 is essentially the same in content and objectives as that approved for the current year.

The funds requested would carry

forward the Civil Defense program at about the same level as the current fiscal year. A financial summary of the program, estimated to cost \$111 million in FY 1968, appears in Figure 4.

Financial Summary

The Strategic Forces programs I have outlined will require Total Obligational Authority of \$8.1 billion in FY 1968. A comparison with prior years is shown below:

FINANCIAL SUMMARY OF CIVIL DEFENSE (TOA*, in \$ Millions) (Fiscal Years)							
	1962	1963	1964	1965	1966	1967	1968
Shelter Survey	58.4	9.3	7.1	10.6	17.7	18.4	18.0
Shelter Improvement	—	—	—	1.4	.5 ^b	—	—
Shelter Development	.3	1.4	1.7	3.6	5.1	5.0	3.7 ^c
Marking & Stocking	90.3	32.7	24.2	2.3	1.1	1.5	4.8
Shelter Use	—	—	—	4.5	2.7	2.3	3.8
Warning	6.8	4.1	1.8	2.7	.6	.8	.9
Command, Control & Communications	22.9 ^a	3.1	6.5	8.4	11.6	3.9	2.8
Emergency Operations Support	16.8	10.1	6.7	6.0	6.6	6.5	9.7
Financial Assistance	18.9	27.5	23.7	25.6	23.9	27.0	30.0
Information Activities	3.9	3.4	2.0	1.4	1.7	2.3	2.5
Management	12.4	13.6	13.9	14.3	12.0	12.6	13.2
Research & Development	19.0	11.0	10.0	10.0	10.0	10.0	10.0
Training & Education	2.6	9.2	12.9	10.7	11.6	11.7	11.6
TOTALS**	<u>252.3</u>	<u>125.4</u>	<u>110.5</u>	<u>101.5</u>	<u>105.1</u>	<u>102.1</u>	<u>111.0</u>
SHELTER SPACES ^d (Millions, Cumulative)							
Identified		103.7	121.4	135.6	152.1	162.0	170.0
Marked ^e		42.8	63.8	75.9	85.3	97.0	112.0
Stocked ^e		9.7	23.8	33.8	41.3	49.0	56.0
^a Includes \$2.3 million carryover from OCDM for construction of a Regional Center; \$13.4 million returned to Treasury—not used by GSA in Federal building construction. ^b Includes Packaged Ventilation Kits. ^c Includes Architect and Engineer advisory services on design techniques. ^d Shelter spaces resulting from the currently approved program; FY 63-66 are actual, FY 67-68 are estimated. ^e Only public shelters having 50 or more space are eligible for marking and stocking. *Total Obligational Authority. **Totals may not add due to rounding.							

Figure 4

	1962 Act.	1963 Act.	1964 Act.	1965 Act.	1966 Act.	1967 Est.	1968 Prop.
Strategic Forces	11.2	10.5	9.3	7.1	6.8	7.1	8.1

General Purpose Forces

The General Purpose Forces include most of the Army's combat and combat support units, virtually all Navy units (except for the Polaris forces), all Marine Corps units, and the tactical units of the Air Force. These are the forces upon which we rely for all military actions short of general nuclear war, i.e., limited war and counterinsurgency operations.

Requirements for General Purpose Forces

Over the last few years I have presented to the Committee in considerable detail our analysis of the limited war problem and our requirements for General Purpose Forces. I have pointed out that our strategic nuclear capability is designed to deter attack at but one end of the spectrum of aggression and that we must, therefore, have other forms of military power, both to deter lesser aggressions and to defeat them if deterrence fails. We need these other forms of military power, not so much for the defense of our own territory as for the support of our commitments to other nations under the various collective defense arrangements we have entered into since the end of World War II. These include the Rio Pact in the Western Hemisphere, NATO in Europe, SEATO and ANZUS in the Far East, and the bilateral mutual defense agreements with Korea, Japan, the Republic of China and the Philippines.

All of these mutual defense treaty commitments, involving a total of some 40-odd sovereign nations, stem from the great policy decision, made at the end of the Second World War, to base our security on the collective defense of the Free World. . . .

In fact even without these treaty obligations, I suspect that our country's action would not have differed significantly in the more than two decades which have elapsed since the end of World War II. . . . We must remember that we twice came to the assistance of our friends in Western Europe without any prior treaty commitments; we did so because we deemed it vital to our own security. We came to the assistance of South

Korea—and we are now assisting South Vietnam—for the same reason. So it is not the treaties themselves that cause our greater involvement in the affairs of the rest of the world, but rather what we deem to be our own vital national security interests over the longer run. . . .

While the distinction between General Nuclear War Forces and Limited War Forces is somewhat arbitrary in that all of our forces would be employed in a general war, and certain elements of our strategic forces in a limited war (e.g., the B-52's against the Viet Cong forces in Vietnam), it is primarily the limited war mission which shapes the size and character of the General Purpose Forces. Because we cannot predict in detail the actual contingencies we may have to face, we must build into our forces a capability to deal with a very wide range of situations. This accounts for the great diversification in the kinds of units, capabilities, weapons, equipment, supplies and training which must be provided and seriously complicates the task of determining specific requirements.

Nevertheless, our continuing study of these requirements has reaffirmed my conclusion that the General Purpose Forces which I presented here a year ago are about the right order of magnitude. This conclusion takes into account the contributions to collective defense which our allies can be expected to make, as well as our own going capability to concentrate our military power rapidly in a distant threatened area. . . .

Although our General Purpose Forces are primarily designed for non-nuclear warfare, we do not preclude the use of nuclear weapons even in limited wars. However, as I have pointed out in previous years, the employment of such weapons in a limited war would not necessarily be to our advantage in every case, and it would present some extremely difficult and complex problems. . . .

A careful review of our General Purpose Force requirements, including the temporary augmentations for Southeast Asia, indicates a need in FY 1968 for a total land force of about 31½ division force equivalents. By "division force" I mean the divi-

sion itself, plus all of its supporting forces, . . . The Army will have 18½ active division equivalents; and the Marine Corps, four. . . .

With regard to tactical airpower we now have a total of about 4,800 fighter, attack and reconnaissance aircraft which constitute the unit equipment of the combat squadrons of both the active and reserve forces of the Air Force, Navy and Marine Corps. . . .

The non-aviation naval forces are more difficult to summarize in this manner and I will discuss them in detail later in the context with the Navy General Purpose Forces.

As I have pointed out on numerous occasions in the past, it is not enough that our forces be of the right size and composition; they must also be provided with the weapons, equipment, ammunition and supplies needed to sustain them in combat. And, since most combat operations will usually involve all the Services, the logistics objectives, which prescribe in broad terms the equipping and stockage standards to be followed, must be as uniform as possible throughout the Department. These objectives, together with the forces to be supported and our contingency deployment plans, determine the content (and costs) of the annual procurement programs.

Of course, the specific procurement programs to achieve these logistic objectives must realistically take account of the state of the production base, especially for ammunition. The purpose of our war reserve inventories is to provide our forces with sufficient supplies to conduct sustained combat until production can be raised sufficiently to offset combat consumption. In peacetime, therefore, when production rates are tailored to low levels of consumption and attrition, it is important to have large stocks on hand, equal or nearly equal to the calculated war reserve objectives. However, once our forces have been committed to combat and production has been built up to offset current consumption, as is now the case in the current conflict, it is not necessary (indeed, it would be imprudent) to rebuild those stocks to their pre-combat inventory levels before the conflict ends. It is not necessary because our present expanded production base will be able to provide for all expected Southeast Asia consumption as well as any

other contingency or contingencies which might arise. It would be imprudent because we know from experience that when the conflict ends, we either would have to shut down the lines abruptly, with all of the resultant adverse consequences for our economy, or we would have to acquire unwanted surpluses.

Accordingly, we have planned our FY 1967-68 procurement program in such a way that if the war should end suddenly, we can taper off production gradually, using the excess production capacity to rebuild our inventories to the desired pre-combat levels. At the present production rates, this could be achieved very quickly. For items which are not currently in expanded production for Southeast Asian operations, or for new items just entering the inventory, we will, of course, continue to procure toward our logistics objectives with the goal of achieving them, wherever feasible and desirable, with the FY 1968 buy.

Capabilities of the Programmed Forces

As I noted earlier, our General Purpose Forces requirements are derived from analyses of contingencies, including the support of our allies around the world. Accordingly, our General Purpose Forces capabilities must be assessed in conjunction with the capabilities of these allied forces. Although we have considerable knowledge of the force plans of our allies, we cannot be sure how they will change with the passage of time. This creates some uncertainty about the specific requirements for U.S. forces in the more distant years of the five-year programming period, for which we must make allowances in our force planning. . . .

Army General Purpose Forces

The Department of Defense for many years, and under several Administrations, has been striving to make the "One Army" concept a reality as well as a slogan. You may recall that when I appeared before the Congressional Committee in May 1961 in support of President Kennedy's recommendations on the realignment of the Army reserve components, I noted that "they must

be so organized, trained, and equipped as to permit their rapid integration into the active Army." Since that time we have not only been working on the question of how the reserve components should be organized but also on how the reserve and active Army structures could best be meshed together. This latter question requires not only a comprehensive analysis of the total Army force requirement but also a very careful and detailed analysis of which elements of the total structure should be provided in the active forces and which in the reserve forces.

Fundamental to this type of analysis is the concept of a "division force." Although the combat division has long been the most widely used standard for measuring the strength of the land forces, it accounts for only about one-third of the combat and support units required to sustain the division in combat over an extended period of time. . . . A "ready" division without "ready" support elements would be incapable of combat. The division force concept ensures that our planning explicitly recognizes this relationship (indeed, interdependence) between the division and its major support elements, since it requires us to identify these elements in detail.

As a first approach to the problem, we have grouped all of the organized (TO&E) units of the division force into three categories:

- The division itself.
- The initial support increment (ISI), i.e., the non-divisional combat and combat support units which are required to support the division in the initial combat phase.
- The sustaining support increment (SSI), i.e., the additional non-divisional units including the combat, combat support, and service support needed by the division for sustained combat operations beyond the initial phase.

By structuring the division force in this way, we can see more clearly the relationship of the divisions themselves to the other Army units shown on the classified table provided to the Committee. . . .

In addition, the division force concept helps us to:

- Relate standards of unit readiness, manning levels, etc., directly to the time phased unit deployment schedules, which underlie our contingency planning.

- Determine more precisely which units must be provided in the active forces and which could be provided in the reserve components.

- Tailor forces for particular missions, operational environments, and tempos of activity.

- Understand better the relationship between support functions (supply, maintenance, transportation, etc.) and combat functions (maneuver and fire power), thereby enabling us to achieve a better allocation of resources among them.

- Calculate more precisely the personnel and materiel requirements of each unit.

While the concept still needs considerable development before all of the foregoing advantages can be fully realized, it has already proved of significant value in our force planning. . . .

Army Force Structure.

The integrated active-reserve Army force structure proposed for the FY 1968-72 period is grouped under three main headings—division and brigade forces, major supporting forces, and combat and support battalions.

Division and Brigade Forces. Because of the temporary Vietnam augmentations to the active Army, the force structure we are proposing at the end of FY 1968 is the equivalent of 27½ division forces in the active and reserve structure combined (18½ active and nine reserve components). . . .

You may recall that funds were included in the FY 1967 Budget to initiate procurement of long-lead-time items for the conversion of a second division to the airmobile configuration, if experience proved this desirable. The existing airmobile division, the 1st Cavalry, proved its worth in Vietnam and I have, therefore, tentatively approved the conversion of an airborne division to an airmobile configuration. The actual timing of this action is subject to the preparation of a detailed conversion plan by the Army and the JCS, but for planning purposes we have scheduled it for early FY 1969. . . .

Major Supporting Forces. This grouping covers the major supporting forces, most of which represent the initial or sustaining support for the division and brigade forces. In FY 1969 (when an airborne division is

converted to airmobile), the Army will keep a portion of the airborne assets to form a new permanent airborne brigade, thereby establishing the brigade total at seven. . . .

Combat and Support Battalions.

. . . We now propose to make a small increase in the number of maneuver battalions. . . .

With respect to artillery battalions, the demands of the conflict in Southeast Asia together with our continuing study of the peacetime force requirements have caused us to make a number of changes in the structure. First, we now plan to increase the number of artillery battalions in the active forces. Second, our experience in Vietnam has shown that the mix of separate artillery battalions could contain more heavy 8" howitzers and 175mm gun battalions. Accordingly, a significant portion of the increase in artillery battalions will be of these types.

The number of engineer combat battalions in the active forces has been temporarily increased in order to meet Southeast Asia needs. . . .

The buildup of aviation units in the Army will continue through FY 1968. . . .

. . . We now plan to initiate in FY 1968 a new development program designed to ensure that the Nike-Hercules can continue to operate effectively in the 1970's. This new program, together with the Hawk Improvement Program, will provide a hedge against possible slippage in the development of the SAM-D which is tentatively planned as a replacement for both Hercules and Hawk.

Last year we had tentatively planned to start procurement of the Improved Hawk in FY 1968. . . . However, the project has encountered some development problems and the program has slipped. Meanwhile, we will go ahead with production preparations, using the funds provided in FY 1967 and those requested in FY 1968 for production engineering and production prototype missiles.

Three types of operational gun/Chaparral battalions are being formed: a fully self-propelled battalion for the armored and mechanized divisions; a modified self-propelled version (including one towed gun battery which can be airlifted) for the infantry division; and an all-

towed version for the airmobile and airborne divisions. . . .

Army Procurement.

The revised FY 1967 Army procurement program now totals \$5,863 million, of which \$2,130 million is included in the Supplemental. The 1968 program totals \$5,881 million. . . .

. . . The FY 1967 program now totals \$1,202 million for 2,697 aircraft, of which \$533 million is included in the Supplemental request. The FY 1968 program includes \$769 million for 1,479 aircraft. The aircraft to be procured include the UH-1B/D (Iroquois) tactical utility transport helicopter, the AH-1G (Cobra) armed helicopter, the CH-47 (Chinook) transport helicopter, the OH-6A observation helicopter, the CH-54A heavy lift helicopter, the U-21A administrative support aircraft, the OV-1C (Mohawk) fixed-wing observation aircraft, as well as a large number of training helicopters.

Funds are also requested for the procurement of long-lead-time components for the AH-56A Advanced Aerial Fire Support System (AAFSS) to permit early initiation of production, when development warrants such a decision.

Army missile procurement (including spares) will total \$561 million in FY 1967 and \$769 million in FY 1968. The FY 1968 program provides for ground support equipment for the Quick Reaction Alert Pershing battalions deployed in Europe; Lance missiles and related ground support equipment; initial procurement of the TOW missile system; a large quantity of Shillelagh missiles; Redeye and Chaparral air defense missiles; and ground support and training equipment for the Hawk missile system.

The revised FY 1967 program for weapons and combat vehicles totals

\$589 million (\$83 million in the Supplemental request), and \$554 million is included in the FY 1968 Budget request. These funds will provide for completion of the planned procurement of the M-139 (HS-820) 20mm gun; substantial quantities of the 20mm Vulcan air defense gun and the 5.56mm rifle; and additional 81mm mortars and self-propelled 155mm howitzers. The funds requested will also provide for procurement of the M-578 light recovery vehicle, the General Sheridan armored reconnaissance and airborne assault vehicle, the M113 armored personnel carrier, the 81mm and 107mm self-propelled mortars, the M-577 command post carrier and the M-548 cargo carrier. We have also included funds for M-60's with the 105mm gun, M-60's with the Shillelagh/152mm gun, the armored vehicle bridge, and the combat engineer vehicle, all of which use the M-60 chassis.

. . . In FY 1968, advance production engineering for the Main Battle Tank will require \$11 million. Additional funds will be required for the U.S. share of the development costs.

The revised FY 1967 program for trucks and other non-combat vehicles total \$653 million (\$154 in the Supplemental request). For FY 1968, \$483 million is requested for a variety of these vehicles. Included in the FY 1968 program are ¼-ton, 1¼-ton (M715), 2½-ton and 5-ton trucks of all types. . . .

For communications and electronics procurement, the revised FY 1967 program provides \$617 million (\$303 million in the Supplemental request) and the FY 1968 request totals \$550 million.

For ammunition the Army's revised FY 1967 program includes \$1,361 million (\$584 million in the Supplemental request). For FY 1968, \$2,224



U. S. Army UH-1G



U. S. Army Lance Missile

million is requested. Ammunition procurement will continue to increase in FY 1968 in order to meet the projected needs of Southeast Asia. Among the major items are: small arms ammunition (5.56mm, 7.62mm, and 30 caliber); 40mm ammunition; 81mm, 105mm, 106mm, 152mm, 155mm, and 4.2 inch cartridges; and 2.75 inch rockets.

The revised FY 1967 program for other support equipment (road graders, tractors, etc.) totals \$608 million (\$247 million in the Supplemental request) and \$437 million is requested for FY 1968. The revised FY 1967 program for production base support totals \$272 million, (\$220 million in the Supplemental request) and \$95 million is requested for FY 1968.

Navy General Purpose Forces

The Navy General Purpose Forces proposed for the FY 1968-72 period are shown on the classified table provided to the Committee. Except for the Vietnamese-related forces, the major changes from the program planned last year concern the anti-submarine warfare forces, the guided missile ships, the amphibious ships and the minesweepers. There is, however, one general problem in this area which deserves special mention, and that is the dolorous state of the American shipbuilding industry.

It has become increasingly apparent in recent years that our shipbuilding industry, both public and private, has fallen far behind its competitors in other countries. Not only does it cost twice as much to build a ship in this country, it also takes twice as long. . . .

This is a startling development in view of the fact that the United States is the most highly industrial-

ized nation in the world. It is even more startling when we realize that the modernization of the European and Japanese yards has been achieved by applying, on a massive scale, U.S. automobile and aircraft manufacturing technology to shipbuilding. . . .

Unfortunately, public discussion of the shipbuilding problem in this country has been focused on what is actually the minor part—its relationship to the Merchant Marine problem. I can well understand why the American Flag Line operators should wish to sever the present interlocking relationship between the Merchant Marine and the shipbuilding industry; they could buy ships abroad at half the price and get delivery in about half the time. But while this divorce might solve the problem of the Merchant Marine, it would not solve the problem of the Defense Department. The U.S. Merchant Marine provides only a few hundred million dollars of work per year to the shipbuilding industry; Navy work amounts to between \$2 and \$2.5 billion a year. Thus the Defense Department, and the taxpayer, has a stake in the American shipbuilding industry which goes far beyond the immediate problems concerning the Merchant Marine.

Obviously, the more fundamental solution is to revitalize the American shipbuilding industry. Although we may never be able to overcome completely the wage rate differential, there is no reason why the American shipbuilding industry should not be, in a technological sense, as good as the best any other country has to offer. We have the technology and the manufacturing "know how;" what we need to do is to find some way in which they can be applied to the American shipbuilding industry and some way to finance the rela-

tively large investments that would be required.

With regard to Navy work, the Defense Department has already embarked on such a program. Wherever feasible, we are grouping our annual shipbuilding program into multi-year procurement. . . .

Of perhaps greater significance over the longer run is the new procurement package approach, of which the Fast Deployment Logistics (FDL) ship is an outstanding example. Under this approach, the shipbuilder is asked to bid on the entire package—design, development and construction—of a relatively large number of ships to be delivered over a period of years, much like the package approach to aircraft procurement. Several new programs of this type are contemplated, and I will discuss these in context with our proposals for the Navy General Purpose Forces in the FY 1968-72 period.

Attack Carrier Forces.

Last year, I described to the Committee a new plan under which we would maintain an active fleet of 15 attack carriers and 12 air wing equivalents, instead of the 13 carriers and 13 air wings we were planning on before. We made this change because of new force structure promises to provide significantly more usable combat power than the one previously planned—and at no increase in cost. However, a force of 15 carriers and 12 air wing equivalents would require some change in the present mode of operation. Carriers would normally deploy in peacetime with less than the maximum complement of aircraft and additional aircraft would be flown to the carriers when and as needed. In effect, we would be treating the attack carrier as a forward floating air base, deploying the aircraft as the situation requires, much as we do in the present carrier operations off Vietnam. It is this kind of operational flexibility that enables the attack carriers to make a unique contribution to our overall tactical air capabilities.

Although the adjustment of the air wings to the new force structure is scheduled to begin in FY 1968 and be completed by FY 1971, the total number of combat aircraft assigned to the attack carrier force will re-



U. S. Army OV-1 Mohawk



USS Enterprise CVA (N) 65

main virtually unchanged. You may recall that two years ago, in a decision unrelated to the number of carrier wings, we decided to increase the number of light attack aircraft per squadron, and the number of light attack squadrons per Forrestal-class carrier. In terms of aircraft assigned, these increases, together with the replacement of Essex-class carriers with the much larger Forrestal's and Enterprise's will just about offset the reduction to 12 equivalent air wings. In other words, each equivalent air wing will have about 25 percent more aircraft than the present average air wing.

Ships. The attack carrier force at the end of the current fiscal year will consist of one nuclear-powered carrier, the Enterprise, and seven Forrestal-, two Midway- and five Essex-class. In FY 1969, the last of the conventionally powered attack carriers now under construction, the John F. Kennedy, will join the Fleet, followed in FY 1972 by the second of the nuclear-powered carriers.

As I stated last year, if we are to retain a force of 15 carriers, two more will have to be provided. One is scheduled for FY 1969 and one in a later year; both will be nuclear powered. Fifty million dollars is included in the FY 1968 Budget for long lead time components for the FY 1969 carrier. When these ships are delivered to the Fleet, the remaining Essex-class carriers will be retired from the CVA force, which would then consist of four nuclear powered, eight Forrestal- and three Midway-class carriers, for a total of 15.

Carrier Aircraft. No major change is contemplated in the composition of the aircraft complement of the attack carrier forces from that projected a year ago. The decline in the number of fighter aircraft after FY 1967 reflects two factors—the previously mentioned reduction from 15 to 12 air wing equivalents beginning in FY 1968 and the substitution of the more capable F-111B for other fighter aircraft on a less than one for one basis. . . .

In contrast to the fighters, the number of attack aircraft will have increased substantially by the time the transition to the 12 equivalent air wings is complete. At that point,

the attack aircraft force will consist of A-6's and the new A-7's. . . .

Inasmuch as the A-3 heavy aircraft are no longer required for the strategic mission, they are now being used as tankers to extend the range of "shorter-legged" Navy aircraft. . . .

No significant changes have been made in the combat readiness training aircraft forces.

ASW and Destroyer Forces.

Three years ago, in recognition of the unsatisfactory state of our knowledge in antisubmarine warfare, I requested the Navy to undertake systematic, long-term studies of all of the related aspects of the problem. From these studies has come a much better understanding of both the character and extent of the threat and the capabilities of the forces required to cope with it. As a result, it now appears that some additional changes should be made in our ASW program. These involve the size of our ASW carrier forces, and the substitution of land-based patrol aircraft for the seaplanes. . . .

ASW Carriers. We now have eight Essex-class ASW carriers, one of which, the Intrepid, is temporarily operating as an attack carrier in support of Southeast Asia operations. Our studies show that compared with other ASW forces, the CVS ASW Group is a high-cost system in relation to its effectiveness; the annual operation cost of a CVS is about \$32 million, including about \$17.5 million for the aircraft complement.

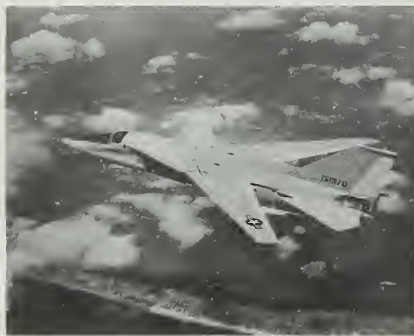
As the newer ASW systems—the SSN's, the DE's, the P-3 patrol aircraft, etc.—join the Fleet in increasing numbers, the relative value of the ASW carriers will continue to decline. Accordingly, we now propose to reduce the force somewhat when the conflict in Vietnam ends.

The older SH-34 helicopters on CVS's have already been replaced by the new SH-3, and the CVA's are now also being provided some of these helicopters.

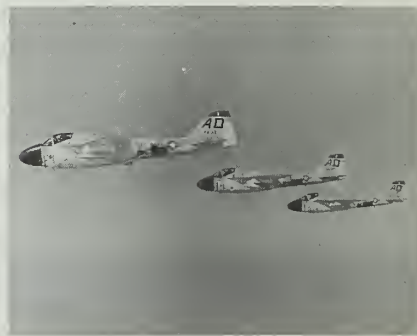
The older S-2's will have been completely replaced by the newer S-2E's by the end of FY 1967. While full scale development and procurement of a replacement aircraft should not be undertaken until the role of the CVS in the overall ASW effort of the 1970's has been clarified and until the need for a more sophisticated capability has been clearly demonstrated, we have included funds for contract definition of a new aircraft (VSX) should further study warrant our going ahead with this program.

In addition to its ASW aircraft, each CVS is authorized a few A-4's in order to provide a limited intercept and air defense capability. Finally we will continue to maintain eight squadrons of carrier-based ASW search aircraft and four squadrons of ASW helicopters in the Naval Reserve forces for the four CVS's we plan to retain in the Reserve fleet.

Attack Submarine Forces. By the end of the current fiscal year the submarine force, excluding Polaris, will number 105 submarines, 32 of which will be nuclear powered. We have continued to encounter difficulty in getting the SSN program on schedule, principally because of the Submarine Safety Program and a shortage of skilled workers. As a result we will have a few less SSN's in the force at end FY 1967 than planned last year but we hope to make up most of this shortfall next year. In the meantime, we propose to offset this slippage by delaying the phaseout of an equivalent



U. S. Navy F-111B



U. S. Navy A-6

number of conventionally powered submarines.

As I pointed out last year, a force of about 64 "first class" SSN's would be needed. . . . Five SSN's were provided by the Congress in FY 1967, leaving a total of six SSN's still to be funded. We now propose to start three more SSN's in FY 1968 and three in FY 1969. This program will give us a total of 64 first class SSN's, plus four other SSN's which could be used together with the conventionally powered submarines for other ASW missions. If our continuing study of the ASW problem should indicate that additional SSN's are required, we can add to this program next year.

Originally, we had intended to modernize 12 conventionally powered submarines (Korean War vintage or later), including provision of improved sonar. Last year, when it became apparent that these sonars were not going to be available in time, we decided to go ahead with the modernization of the first five submarines without the sonar improvements. It now appears that the new sonar components will still not be available for installation in the remaining seven submarines in FY 1968. Moreover, other modernization costs have risen to the point where we now believe that it is no longer practical to proceed with the program. Accordingly, the plan to modernize these seven submarines in FY 1968 has been dropped.

In the Submarine Direct Support category, we propose a phased replacement program for our present submarine rescue ships (ASR's). . . . Therefore we tentatively propose to

construct five new ASR's over the next few years. These new ASR's will have catamaran (i.e., twin) hulls and provide much greater deck space, including a helicopter platform, and better sea-keeping qualities than the present ships. They will be capable of operating two rescue submersibles and supporting divers at great depths for prolonged periods. We are requesting \$17.7 million for the ASR in FY 1968.

In addition to the 10 ASR's, which we plan to maintain throughout the period, the Submarine Direct Support force includes six submarine tenders (AS) and nine auxiliary submarines (AGSS). Two new submarine tenders are tentatively scheduled to be constructed in future years.

ASW Escorts. The requirement for ASW escorts can be met by several different types of ships most of which are also capable of performing other missions such as patrol, fire support and anti-air-warfare. In planning for our future ASW escort forces, all ships with an ASW capability are taken into account. However, only the destroyer types without a SAM capability are included under the ASW category; the SAM ships will be discussed later. . . .

Two years ago we proposed a phased replacement program for the destroyer escort force. In accord with that plan, \$298 million has been included in the FY 1968 request for 10 more of these ships. . . .

With respect to the years beyond FY 1968, it now appears that substantial construction and operating economies could be achieved with a newly designed ship (tentatively designated the DX) employing the "total package" procurement concept and a large multi-year buy. It may also be possible to use the same approach and the same or a similar design for a new class of guided missile ships (tentatively designated the DXG). Accordingly, we propose to initiate a new program which would provide for:

- Standardized design and serial production of a sizable quantity of identical ships in order to minimize total procurement cost.

- Incentive to the contractor to design a highly automated ship requiring minimum manning in order to reduce operating costs.

- Standardization in order to reduce logistic support costs.

- Possible standardization/integration of the DX and DXG in order to maximize further advantages of standardization and serial construction (e.g., both ships might have the same hull and differ only in their weapon systems, or perhaps their hulls could have common bow and stern sections with separate mid-sections for each type).

- Possible use of modular design concepts so that major components (e.g., specific weapon systems) could be installed and removed *en bloc*, facilitating both repair and future modernization.

We have included \$30 million in the FY 1968 Budget to initiate concept formulation and contract definition of the DX/DXG. At the conclusion of the contract definition phase the entire program will be reevaluated in the light of the detailed designs and cost estimates which result.

We are also continuing to improve the SQS-23 sonars on most of the earlier DE's and on a large number of DD's, guided missile destroyers (DDG's), and cruisers (CG/CGN's). . . . About \$18 million was programmed for this purpose in FY 1966, about \$11 million in FY 1967, and we are requesting another \$24 million in FY 1968.

As I described a year ago, we are taking steps to improve the ASW capabilities of 13 remaining D-931 class destroyers, all of which are less than twelve years old. We are providing them with ASROC, improved communications, a new variable depth sonar (VDS), improved ECM capabilities, the improvement to the SQS-23 sonar, a modern ASW combat information center, etc.—at a cost of about \$14 million each. Since the VDS equipment will not be available this year, the ships are being rewired now to accept it later when it does become available. With these improvements, the 13 remaining DD's should offer comparable, and in some ways even better, ASW performance than the new DE's we are building.

Originally, having funded one in FY 1964, we planned on five of these DD-931 conversions in FY 1966 and five this year, with the last three scheduled for FY 1968. However,



Artist's Concept of U. S. Navy A-7A

because of equipment procurement problems, we have rescheduled the program. We have one in conversion now and plan to start three conversions this year, seven more in FY 1968, and the last three in FY 1969.

Patrol Aircraft. While we still plan to maintain a total of 30 squadrons of ASW patrol aircraft, we now propose to phase out the three remaining squadrons of seaplanes (SP-5) and retain, instead, three squadrons of SP-2 land-based patrol aircraft. One squadron will be converted this year and the other two in FY 1968. This change will permit us to decommission the three remaining seaplane support ships (AV's) and thereby save \$17 million per year in operating and indirect costs, with no reduction in our overall ASW or surveillance capability. Except for these three squadrons, all the SP-2's will be phased out of the active ASW patrol forces over the next few years and replaced with 27 squadrons of the new P-3's. (Ten squadrons of SP-2's will be retained in the Navy Reserve.)

Beginning in FY 1968, all new P-3's will be procured with the A-NEW avionics system and when the force buildup is completed we will have nine squadrons so equipped. . . .

Multi-Purpose SAM Ships. The multi-purpose surface-to-air missile (SAM) ships provide an important part of the Fleet's anti-air warfare (AAW) capability. As I described last year, our current program objective for the SAM force is 79 ships. . . . By the end of FY 1967 the SAM ship force will consist of 70 ships, three of them nuclear powered.

Last year Congress added funds to our original budget request for construction of a nuclear-powered frigate. As you know, we did not recommend the inclusion of such a ship in our FY 1967 program. However, we have decided to proceed with construction this year, . . .

I am also again recommending the construction of two guided-missile destroyers (DDG's) . . .

The new DDG's and DLGN would have significantly improved AAW and ASW capabilities compared with present SAM ships, particularly in

a hostile ECM environment. . . . They will employ the new Standard missile and be equipped with the latest ASW equipment, the Navy Tactical Data System, and the improved SQS-26 sonar. Provisions would, of course, be made to incorporate new systems and technologies as they become available, and space will be provided for this. Some \$167 million is requested for the two DDG's in FY 1968.

In addition, we are continuing the SAM Improvement Program, under which the Standard missile is now being procured to replace both Tartar and Terrier. . . .

Last year I mentioned that we were studying the feasibility of providing a "close-in" or "point" air defense capability for other types of combat ships. We now propose to procure and install a basic Point Defense Surface Missile System (PDSMS) on ships which are not likely to encounter the more sophisticated forms of air attack and which do not generally operate in the company of regular SAM ships—e.g., amphibious assault ships and destroyer types operating independently near hostile land areas. This system makes use of existing hardware (e.g., Sparrow III missiles) and can be installed on existing gun mount foundations. . . .

About \$14 million has been included in the FY 1968 Budget for the first procurement.

Other Combatant Ships.

At end FY 1967, there will be 23 ships in the Small Patrol category. These ships are used for coastal surveillance and patrol boats (PTF's) costing \$17 million have been added to the FY 1967 program.

The primary mission of fire support ships, also included in this category, is to provide a heavy concentration of ship-to-shore fire during amphibious assaults. . . . the Navy is presently studying the feasibility of a new type of landing force support ship which would combine the fire support capabilities of the cruiser's heavy guns and the rocket ship's saturation fire.

Amphibious Assault Ships.

Last Year I informed the Committee that while our objectives of achieving a modernized (20-knot) amphibious lift for one and a half Ma-

rine Expeditionary Forces (MEF, or division/wing teams) and sufficient older ships to provide a slower lift for another half of a MEF remained the same, further study of the composition of the force had convinced us that some modification of the future construction program was desirable. I also noted that the Navy was investigating the possibility of designing a multi-purpose ship which could combine the features of several different types of amphibious ships and that one of the reasons we had rescheduled the program was to provide time to develop a design for this new ship. . . .

. . . Unfortunately, experience has shown that our current LPD's are too small to be truly effective as a multi-purpose amphibious ship in the assault role and they cannot by themselves serve as a replacement for a variety of specialized ships. For this purpose we need a bigger assault ship capable of landing, either by air or by sea, a much larger and more balanced land force than is now possible with any existing amphibious vessel, and this was the type of ship I mentioned last year.

Our further study of this problem indicates that the development of such a ship is not only feasible but highly desirable. On the basis of the Navy's preliminary design work, this amphibious assault ship, now designated the LHA, would be quite large (about 40,000 tons, compared with less than 18,000 tons for the LPD) and would have both a boat well and a helicopter deck. . . .

In view of these advantages, we now propose to substitute LHA's for a variety of specialized amphibious ships which we had previously programmed. The first of these LHA's has been included in the FY 1968 program. As in the case of the C-5A and the Fast Deployment Logistics ships, we plan to use the two-step contract definition, total package procurement technique for the LHA's, and \$18 million is included in the FY 1968 Budget for contract definition, in addition to funds for the construction of the first ship.

One of the goals we hope to achieve in this program is a considerable reduction in operating costs. To this end the competing contractors will be encouraged to design this ship so that

it can be operated by significantly fewer personnel than previous ships of this size. . . .

Mine Countermeasure Force.

At the end of this fiscal year we will have a mine countermeasure force of 88 ships, composed of 64 ocean minesweepers (MSO's), 18 coastal minesweepers (MSC's), three mine countermeasures support ships (MCS's), and three other support ships.

In order to modernize this force and improve its mine countermeasure capabilities, we propose to undertake a major rehabilitation program for all the existing MSO's. . . . We propose to start the rehabilitation of nine MSO's in FY 1968, for which we are requesting \$33 million.

Two years ago, we started a construction program for new MSO's. Four MSOs were funded in FY 1966, five more in FY 1967, and we are requesting \$61 million in FY 1968 for the last seven. . . .

Last year we initiated a program to provide some of the Marine Corps assault helicopters (CH-53's) with a secondary mine-sweeping capability. . . . Modification of some of these helicopters to accept the sweep equipment was begun last year, and we plan to start more in FY 1968. This program will give our assault forces a significantly augmented minesweep-

ing capability against less sophisticated mines at a total costs of only about \$12 million.

Logistical, Operational Support, and Direct Support Ships.

. . . In order to take advantage of modern re-supply methods and to complement the higher speeds of our latest ships, we have planned a long range construction program to rebuild the underway replenishment fleet. The FY 1968 program includes two AE's (ammunition ships) and one AOE (fast combat support ship) at an estimated cost of \$137 million.

Marine Corps Forces.

The major Marine Corps ground and air units shown on the classified table provided to the Committee are essentially the same as those we projected last year. The temporary units added to support the Southeast Asia deployments include a fourth active division with its associated nine infantry, one tank, one amphibian tractor, and the equivalent of five artillery battalions, four Hawk air defense batteries, and two light observation and two medium transport helicopter squadrons. The permanent force remains at four divisions/aircraft wings (3 active and one reserve).

The Marine Corps fighter forces will be maintained at about the current level. . . .

The Tactical Air Control (TAC) force, which is used to locate enemy targets and then direct the attack aircraft to them, is programmed to remain at the present level. . . .

In the transport helicopter category, we now plan to maintain the currently augmented active force level through FY 1969, while simultaneously building our Reserve structure. When the Vietnam conflict ends the Marine Corps transport helicopter force will return to the planned permanent level. . . .

In the light helicopter and observation category the total number of aircraft will be increased significantly in FY 1968 through the temporary retention of O-1's and UH-1's previously scheduled to phase out after the new OV-10's are delivered.

Last year we undertook a major program to increase the fixed-wing combat readiness training capabilities of the Marine Corps. This program will be continued. We also undertook at that time, on a temporary basis, a program of combat readiness training for Marine Corps helicopter pilots. . . . We now plan to make the combat crew readiness training program permanent and to expand the force level. Later, as the OV-10 enters the operating force, we plan to add some of these aircraft to the combat readiness training force.

The numbers of tanker/transport aircraft and of support aircraft are essentially unchanged from those presented last year.

Navy and Marine Corps Reserve Forces.

The Navy will continue to maintain a total of about 50 ships in the Naval Reserve. . . . As more modern ships become available from the active forces, older ships will be phased out.

The Navy also maintains a large number of ships in the Reserve (or "mothball") Fleet, in either Category B (BRAVO) or Category C (CHARLIE) according to their physical condition and readiness status.

As I noted last year, because of their relatively poor physical condition many of the CHARLIE ships would be usable only after extensive overhaul and modernization. Accordingly the Navy is continuously surveying these ships in order to identify those which have no further value. These ships are then scrapped



Replenishment at Sea

or otherwise disposed of. As a result, the size of the Reserve Fleet has been progressively reduced.

The Naval and Marine Corps Reserve air units are programmed for about 740 aircraft at the end of this fiscal year, and this number will be increased over the next few years. . . .

Navy-Marine Corps Aircraft Procurement.

The Navy and Marine Corps aircraft procurement program is shown on the classified table provided to the Committee. In order to meet the requirements of the Southeast Asia conflict and continue the planned modernization of the force, we propose to increase the FY 1967 program from the original 620 aircraft to 1,047, and to buy another 680 aircraft in FY 1968 instead of the 604 planned a year ago. . . .

With regard to the modernization of the attack carrier fighter forces, we still plan to initiate F-111B procurement in FY 1968. . . .

To provide for combat attrition beyond FY 1967 and complete the equipping of the Marine Corps fighter squadrons, we have increased the FY 1967-68 F-4 procurement programs substantially over the number previously planned. This will permit the replacement of the last Marine Corps F-8 squadron in FY 1968.

Since we plan to retain a number of F-8 aircraft in both the active Fleet (for the Essex-class CVA's) and the reserve forces for some time beyond FY 1968, we have decided to rework a substantial number of the latest models, providing them with new wings and other life-extension modifications. The program was initiated last spring, using about \$17 million of FY 1966 funds; \$70 million is included in the revised FY 1967 Budget; another \$70 million is requested for FY 1968.

In the attack category we now plan to increase substantially the FY 1967-68 procurement program envisioned a year ago. We have added A-4F's and A-6A's to the FY 1967 program, and A-6A's to the FY 1968 program. The A-7 program for FY 1967-68 is about the same as presented a year ago.

Last year we had planned on buying the first 100 OV-10 aircraft for the Marine Corps in FY 1967. However, the need for certain design

changes has delayed the award of the contract and has caused us to reduce the FY 1967 quantity. Additional OV-10's will be procured in FY 1968.

For the ASW mission, another increment of the P-3's with A-NEW will be procured in FY 1968.

To provide for the higher tempo of operations and future combat attrition in Vietnam, we are increasing our procurement of helicopters in FY 1967, and buying more in FY 1968.

In the Fleet Tactical and Mission Support category, we have added some C-130 radio relay aircraft to the FY 1967 program and canceled the previously planned C-2A procurement. . . .

The increase in planned pilot production from 2,200 to 2,525 per year will require the procurement of additional training aircraft. . . .

Accordingly, we have canceled the previously planned procurement of 72 T-28C's in FY 1966 and 58 in FY 1967, and instead we now propose to procure 36 T-2B's and 94 TA-4's in FY 1967, and 90 T-37B's in FY 1968. We have also included in the FY 1967 program 9 TC-4C's (a version of the Grumman Gulfstream) for navigator bombardier training. This will reduce the requirement for A-6A's now being used for this purpose.

For helicopter training we will be able to utilize UH-1E's as they are released by new OV-10's phasing into the force, thus permitting the cancellation of the 20 TH-1E planned for procurement in FY 1967. In addition, we plan to buy 40 new instrumented light turbine helicopters (LTH's) in FY 1968 to provide the increased training capacity mentioned earlier.

Other Navy Procurement.

In order to build toward our logistics objectives and to provide for projected combat consumption in Southeast Asia, we are requesting \$1,389 million in FY 1967 (of which \$164 million is included in the Supplemental request) for Navy missiles, ordnance, and ammunition; and \$1,723 million more is requested in the FY 1968 Budget for this purpose.

Large quantities of air-to-ground munitions will continue to be needed in FY 1967-68. The largest single item in this category is the MK-82

500-lb. bomb. Other important items in the FY 1968 program are the 2.75-inch rockets, the 5-inch Zuni rockets, the 250-lb. bomb, Walleye TV-guided glide bombs and air-to-surface anti-radiation missiles.

For the surface-to-air missile ships which provide the Fleet's air defense, the Navy will procure only the new Standard missile beginning in FY 1968, although deliveries of Terrier and Tartar missiles will continue for some time. We are requesting \$52 million in FY 1968 for both the medium range and the extended-range Standard missiles.

. . . Funds for the procurement of the final quantity of Talos missiles . . . are included in the FY 1968 Budget.

With respect to air-to-air missiles, we are buying both the Sidewinder and the Sparrow III in FY 1968. . . . We also propose to initiate pilot line production of the Phoenix missile in FY 1968.

In the ASW category, we plan to continue the procurement of ASROC and SUBROC in FY 1968. . . .

Last year I informed the Committee that the DASH ASW drone helicopter was encountering higher-than-expected peacetime attrition and lower-than-expected performance, and that we would review the entire program. As a result of this review, we have now decided to reduce the planned deployment of this system by about one-third. . . . This reduction in deployment will permit cancellation of the previously planned FY 1967 procurement.

Improved ASW torpedoes continue to be a major prerequisite to a more effective ASW force, and this category of weapons has continued to receive our close attention. . . . In an attempt to expand the production



U. S. Marine Corps CH-53A

base for the MK-46 and obtain the cost benefits of competitive procurement, we have opened a second production source. Although we have achieved the cost benefits (the torpedoes bought in FY 1966, for example, cost \$124.3 million compared with the budget estimate of \$179 million), it now seems clear that we will not achieve the production levels in FY 1967 originally expected. Accordingly, the FY 1968 procurement is adjusted to take this slippage into account.

Funds are also included in the FY 1968 Budget for the AN/SSQ-41 (Julie, Jezebel), an improved sonobuoy capable of employment in either an active (Julie) or passive (Jezebel) mode. . . .

Finally, a total of about \$125 million is included in the FY 1968 Budget for 8-inch, 6-inch and 5-inch naval gun ammunition to meet the consumption requirements of Southeast Asia and continue the buildup of our stocks.

Marine Corps Procurement.

The FY 1967 Marine Corps procurement now totals \$541 million, of which \$253 million is included in the FY 1967 Supplemental. For FY 1968, a total of \$715 million is requested. Included in the FY 1967 total is \$231 million for munitions and ordnance (\$114 million in the Supplemental); \$463 million is included for this purpose in FY 1968.

The FY 1967 Supplemental provides about \$70 million for the procurement of support vehicles such as ¼-, ½-, 2½-, and 5-ton trucks, and \$39 million more is included for support vehicles in FY 1968. For tracked vehicles, \$4 million is included in the FY 1967 Supplemental and \$5 million in the FY 1968 Budget.

In the communications and electronics category, which includes such major items as radars and the Marine Corps Tactical Data System (MTDS), we have increased our FY 1967 procurement to \$107 million, \$29 million of which is included in the Supplemental request. Another \$145 million is included for communications and electronic equipment in FY 1968.

Air Force General Purpose Forces

The Air Force General Purpose Forces shown on the classified table provided to the Committee are essentially the same as those presented a year ago, with the exception of certain changes related to our operation in Vietnam.

Fighter and Attack.

Our long range force objective in this category is the same as last year, namely, 24 wings of F-4's, F-111's and A-7's. In the near term, however, we now propose to make several changes in the force structure and procurement programs. For the most part, these adjustments are related to operations in Southeast Asia, in particular, the changes in our budget planning assumptions and the variations from the projected combat attrition rates reflected in our force planning last year. And, in a few cases, the proposed changes are the result of adjustments in production schedules.

The B-57's that we are using in South Vietnam will decline in number through FY 1968, after which they are scheduled to phase out of active service completely.

With respect to the F-100's, we had originally planned to phase down the active force to fewer aircraft by end FY 1967. However, attrition has been lower than forecast and we will

have more squadrons in the force at end FY 1967 than we had previously planned. . . .

Last year we had planned to hold a large number of F-102's in the force through FY 1967 and then phase down considerably in FY 1968. However, in order to free F-4's for deployment to Vietnam, F-102's scheduled to phase out of the continental air defense forces were transferred to the tactical forces in FY 1966.

Last year we had planned to retain the two F-104 squadrons through FY 1967. However, we now plan to have only one squadron at end FY 1967 and phase this squadron out by the end of FY 1968.

The number of F-105's in the active force is projected to decline, and ultimately these aircraft will be phased into the Air National Guard.

The F-4's are experiencing somewhat lower attrition than forecast last January and this will help the force to build up faster than planned. . . .

The F-111 activation schedule is the same as planned last year, except, for a small slippage in a few of the later squadrons.

Last year, in order to help diversify the Air Force tactical fighter force, we proposed the procurement of the A-7, a relatively inexpensive subsonic aircraft with good range, large ordnance-carrying capability, long loiter time, and good close ground support features. Our original deployment schedule called for activation of the first squadron in FY 1968 with more to be introduced later. However, this schedule was predicated on an early decision to proceed with the deployment of an afterburner for the Air Force A-7. . . .

Two considerations caused us first to delay and then change this decision. First, it appeared desirable, if possible, to find a new engine production source rather than add to the already crowded schedule of one of our principal engine manufacturers. Second, if a different, more powerful engine could be used, the load-carrying capacity of the A-7 would not have to be penalized by several hundred pounds of dead weight which the afterburner would involve. Such an engine, the Rolls Royce's "Spey," proved to be obtainable from Allison, who will produce it in the United States under license



U. S. Air Force F-4C



U. S. Air Force RF-101

from the British firm. The net result of this decision will be a more capable aircraft but a delayed delivery schedule for the first aircraft. However, a new, faster production schedule will still permit the achievement of the projected force by the originally planned date.

Tactical Reconnaissance.

The present long range objective for the tactical reconnaissance force remains the same as a year ago.

Because of anticipated Southeast Asia attrition and higher training requirements, the RF-101 force had been expected to decline by the end of the current year and then level off. In order to maintain that level, we will have to modify additional F-101's to the RF-101 configuration.

With respect to the RF-4's, the force will be built up to its full planned strength, although projected attrition in Southeast Asia will cause a slight delay in the scheduled build-up.

Ultimately, we will probably want to introduce a more advanced capability into the tactical reconnaissance force. To this end we initiated in FY 1966 a development project which would provide a reconnaissance version of the F-111. This development provides for the necessary equipment to be installed in the attack version of the F-111 with minimum modification to the aircraft. Through FY 1967, \$25 million has been devoted to this effort and \$2 million more is included in the FY 1968 requested. An additional substantial sum is included in our request for the initial procurement.

Tactical Electronic Warfare Support.

With the increasing importance of electronic warfare, underscored by our experience in Southeast Asia, we have decided to establish a separate Tactical Electronic Warfare Support (TEWS) force in the Air Force General Purpose Forces. This force will be composed of EB-66's converted from the RB/EB-66 aircraft previously shown in the reconnaissance category, and EC-47's (formerly RC-47's).

In order to provide sufficient aircraft for training, maintenance and advanced attrition, we plan to convert the RB-66's now in the force and WB-66's now in storage to the EB-66 configuration; this will involve

some modification of the engines and provision of new ECM gear. A substantial sum is requested in the FY 1967 Supplemental for these modifications. Later, as advanced electronic equipment becomes available (e.g., from the Navy EA-6B program), it may be retrofitted into these aircraft.

Special Air Warfare Forces.

Since its creation in 1962, the Special Air Warfare (SAW) forces have grown both in size and in the range of missions performed. . . .

In order to meet the requirement of the Vietnam conflict, we have increased the size of the SAW force. This increase includes additional O-2's, AC-47's, C-123's, C-47's, and A-37's, partially offset by the reduction of A-1's.

Other Aircraft.

The Tactical Air Control System (TACS) provides the command and control capability for the tactical air commander in field operations. Currently, the Air Force is using modified O-1 aircraft transferred from the Army for the Airborne Forward Air Controller (AFAC) mission in Southeast Asia. Last year, we had planned to convert this force completely to OV-10's by the end of FY 1968. However, during the past year the requirement for AFAC aircraft has virtually doubled and, as a result, the authorized TACS force has been increased. In addition, the OV-10 program has slipped and we do not now expect deliveries of that aircraft to the Air Force to be made as fast as originally planned. In order to build up the force as soon as possible, we have already taken action to procure an off-the-shelf Cessna aircraft designated the O-2. . . . With respect to the longer term, it is too early to make a final deter-

mination of the size and composition of the TACS force, a matter we now have under study.

Combat Readiness Training.

As described a year ago, we want to increase the size of the advanced flying training base very significantly over what it has been in recent years. Predicated on the assumption that the Southeast Asia conflict would end by 30 June 1967, this expansion was to have been substantially achieved by the end of FY 1968. Now, however, under our revised budget planning assumption, completion of the buildup of the training base in terms of aircraft would be delayed until the following year. . . .

Tactical Missiles.

As I indicated last year, the remaining Mace B missiles (one squadron) deployed in Germany will be phased out as Pershing takes over the quick reaction alert (QRA) role. The remaining Mace B's deployed in Okinawa, however, are tentatively scheduled to remain in the active force through the program period.

Air National Guard.

A number of changes have been made in the planned equipment of Air National Guard squadrons, most of them related to changes in the active structure. The Guard will retain more F-84's and F-86's longer in order to offset delays in the transfer of F-100's and F-105's from the active forces. The Guard will have 547 tactical fighters at end FY 1967 and this number is scheduled to increase modestly in future years.

Aircraft Procurement.

The Air Force will procure a total of 732 tactical, air control, and reconnaissance aircraft for the General Purpose Forces in FY 1967, at a total cost of \$1,847 million. (Of this



U. S. Air Force F-105



U. S. Air Force C-123B

total, 102 aircraft costing \$457 million are in the FY 1967 Supplemental request.) For FY 1968, 874 aircraft costing \$2,076 million are requested for these forces. Both the FY 1967 and FY 1968 programs provide for combat attrition through the normal production lead time. Accordingly, if the Vietnam conflict should end before that date, both the active and reserve Air Force structures would be modernized faster than now projected.

Last year, we had scheduled procurement of a sizeable number of F-4 aircraft for FY 1967 and a final procurement in FY 1968. We now propose to increase the FY 1967 program and buy an even larger quantity in FY 1968.

With respect to the F-111A, we now plan to buy somewhat fewer aircraft in FY 1968 than we planned last year so as to be able to include certain improvements, which are now being made, in more of the aircraft. The aircraft deleted from the FY 1968 program will be added to the end of the line. . . .

The Air Force's A-7 program has, as I indicated earlier, slipped substantially from that projected a year ago. . . . The FY 1966 buy has been deleted and the FY 1967 buy reduced. For FY 1968 we plan to buy a large number of A-7's, and additional offsetting upward adjustments in procurement in subsequent years should permit us to achieve the planned force level by the originally scheduled date. . . .

Last year we had tentatively scheduled procurement of 157 OV-10's for the TACS force. However, the TACS requirement has grown sharply during the past year, leading to the decision to buy the O-2 and this, coupled with a delay in projected OV-10 deliveries and an increase in the cost of that aircraft, has caused us to revise our planned procurement program. Although we still plan to purchase 157 OV-10's for the TACS mission, the FY 1967 buy has been reduced and the difference added to the FY 1968 program. Further procurement of the

OV-10 for the Air Force will depend upon a future decision to use it to help modernize the Special Air Warfare Forces.

As previously mentioned, action has already been initiated to procure 176 O-2A aircraft in FY 1967 for the TACS force and SAW force's program to provide for combat attrition replacement. . . .

More A-37 aircraft have been added to the FY 1967 program and still more will be procured in FY 1968. We also plan to buy more F-5's, principally to help modernize the Vietnamese Air Force.

Finally, to offset projected attrition of reconnaissance aircraft in Southeast Asia, the FY 1968 quantity of RF-4 aircraft has been increased and more will be procured later for advance peacetime attrition. And, as previously mentioned, to maintain the desired level of RF-101 squadrons, we will convert a number of F-101's to the reconnaissance configuration in FY 1968.

Other Air Force Procurement.

The Air Force's aircraft non-nuclear ordnance program for FY 1967 totals \$1,739 million, of which \$438 million is included in the Supplemental request. The proposed FY 1968 program totals \$1,629 million. . . .

"Iron bombs," which are being consumed at high rates in Southeast Asia, will continue to dominate the FY 1967-68 procurement programs. For these two years, \$1,400 million will be spent on these bombs, including 250-lb., 500-lb., 750-lb., and 2000-lb. bombs; \$31 million is for napalm bombs and \$463 million is for 2.75-inch rockets and 20mm ammunition. For certain special purpose ordnance, \$888 million is requested.

Also included in the Air Force's FY 1967-68 program is \$241 million for TV-guided Walleye's, anti-radiation missiles, and Sparrow air-to-air missiles.

Theater Air Base Vulnerability.

The theater air base vulnerability program is designed to minimize the

damage an enemy could do to our overseas airfields, and the aircraft on them, in a non-nuclear attack. . . .

This year's request for \$26 million will provide various vulnerability reductions measures (shelters, paving for dispersal sites, POL facility hardening, etc.) at a number of European and Pacific bases. The total program presently envisioned would ultimately provide shelter for a significant number of aircraft and other high-value aviation equipment, together with the full range of other vulnerability measures—at a total cost of about \$178 million. I urge the Congress to provide the \$26 million included in our FY 1968 request so that we may get started promptly on this critical program.

Tactical Exercises

Under normal peacetime conditions, large scale strategic mobility and tactical exercises contribute to the maintenance of high combat readiness, provide highly visible demonstrations of our capabilities, help test new operational concepts and weapon systems, and permit U.S. and allied forces to perfect coordination procedures which they would have to use in wartime. However, with the expansion of combat operations in Southeast Asia during the past 18 months, the importance of simulating such operations has dropped sharply and in FY 1966, only about \$9 million was used for the larger exercises "directed" or "coordinated" by the Joint Chiefs of Staff. Therefore, on the assumption that the Vietnam conflict will continue through FY 1968, we have budgeted only \$27 million for this purpose, far below the \$100 million plus level of pre-Vietnam years.

Financial Summary

The General Purpose Forces Program outlined above will require total obligational authority of \$35.4 billion in FY 1968.

A comparison with prior years is shown below:

(\$ Billions, Fiscal Year)							
	1962	1963	1964	1965	1966	1967	1968
	Act.	Act.	Act.	Act.	Act.	Est.	Prop.
Total Obligational Authority	18.0	17.9	18.0	19.1	29.5	34.3	34.4

Airlift and Sealift Forces

Included in this program are the Military Airlift Command transports, the Air Force's troop carrier aircraft assigned to the Tactical Air Command and the Unified Commands, the transport and troop carrier aircraft in the Air Force's reserve components, and the troop ships, cargo ships, tankers and "forward mobile depot" ships operated by the Military Sea Transportation Service.

Although not specifically included in the Airlift/Sealift Program, those elements of other major programs whose missions and capabilities are closely related to the general requirement for lift have also been considered in determining what forces should be provided here. These other elements include such specialized transportation forces as the carrier-on-board delivery aircraft of the Navy and the cargo aircraft of the Marine Corps.

Within the context of this specific program, the lift mission consists of two main tasks: the strategic requirement for transport support of military operations in overseas areas and the tactical requirement for intra-theater and assault airlift. The strategic task can be further divided into the requirement for the initial rapid military response to distant crises and the longer term requirement for continuing support and re-supply of overseas military operations. This distinction is very important because it helps determine what kind of equipment is needed, when it must be available, how it should be organized and deployed, and who should control it. As you know, during the past several years, our principal concern in the airlift/sealift area has been to build up a quick-reaction capability adequate to meet our global security commitments. More recently, our experience in supporting a major military deployment in Southeast Asia has focused our attention on the problems of providing lift support over the longer term, and especially under conditions when it is not feasible to requisition commercial shipping.

Strategic Movement

All of our studies show that the length and cost of a war, as well as the size of the force ultimately required to terminate it favorably, are importantly influenced by how fast we can bring the full weight of our military power to bear on the situation.

In previous posture statements I have discussed at some length the range of strategies available to us for meeting the requirement for such prompt and effective response to distant military contingencies. Basically, these choices range from reliance on large ready forces deployed overseas in advance of need, to reliance on a central reserve of men and equipment in the United States to be deployed by airlift and sealift as required. A strategy which combines features of both these extremes might provide for prepositioning equipment and supplies overseas, either on land or aboard ship, with the men to be airlifted in as needed. Although each of these approaches has its own advantages and disadvantages with respect to operational flexibility, foreign exchange costs, total manpower and equipment requirements, etc., the strategy of a mobile central reserve supported by an adequate lift capability and balanced prepositioning has long been accepted as the preferred alternative for meeting the rapid response objective.

During the past several years, the Defense Department has been embarked on a major effort to achieve the rapid deployment capability needed to support such a strategy. . . . Now, we are buying a new transport, the C-5A, which will enable us to make another major improvement, both qualitative and quantitative, in our strategic airlift capacity. Thus, when our presently planned six squadrons of C-5A's are all in the force in FY 1972, our airlift capacity will be more than ten times what it was in FY 1961.

Over the years, forward prepositioning of military materiel, especially heavy and bulky equipment, has grown in importance, partly because of the great increase in our ability to

airlift forces and partly because of the emergence of new prepositioning concepts and equipment. The most important of these concepts has been the "forward floating depot (FFD)" in which balanced stocks of equipment and supplies are maintained on ships stationed overseas within a few days steaming distance of potential trouble spots, and thus very quickly available to "marry up" with airlifted forces from the central reserve. As a first generation "floating depot" system we planned to use old Victory-class ships, specially modified for this purpose. Three of these ships were actually deployed in FY 1963 and we had planned to add more this year. However, the requirements of the conflict in Southeast Asia have now caused us to defer this deployment for the time being.

Our future plans call for this first generation system to be replaced by a new class of ships, the FDL's, which are being specifically designed to support a rapid deployment strategy. Unlike the relatively slow (16 knots) and small payload (2,265 short tons) Victory ships, the FDL's will be fast, large payload (8-10,000 short tons) ships capable of rapidly delivering cargo either over-the-beach, using embarked lighters and helicopters, or at established ports. Because of these improvements, the FDL's will provide a wider range of operational flexibility than the Victory's. While we would probably always want to have some of them fully loaded and deployed forward, some of them could also be held partially loaded with ammunition and supplies but in a ready status in either U.S. or overseas ports where vehicles, helicopters, etc., tailored to the mission, could be placed on board quickly as the situation requires. This mode of operation, which is feasible only because of the speed and efficiency of the FDL's, would allow us to meet the desired rapid deployment schedules without immobilizing indefinitely large amounts of high cost equipment, some of which also requires substantial continuing maintenance. In either mode of operation, however, the FDL's would have to be committed to the rapid deployment mission at all times and would not be available for regular point-to-point service. Thus, while they will make an enormous contribution to our rapid deployment capability and will also be highly

efficient carriers for resupply after the initial deployment phase, these FDL's in themselves do not provide the answer to the overall sealift problem.

Indeed, all of our study and experience shows that the requirement for sealift continues to grow after the initial buildup phase, as more forces are deployed and stocks of consumables have to be replaced. To meet this larger and longer term need, we must rely in large part on merchant shipping. Based on the transportation requirements implicit in our contingency planning for a number of the most likely limited war situations, it appears that the equivalent of up to 460 general cargo ships (averaging 15,000 MT capacity, 15 knot speed) might be needed in a future emergency, over and above those available in our own Airlift/Sealift Forces. Simply in terms of size, the U.S. Flag Merchant Fleet (active and reserve) is adequate for such contingencies now, and should continue to be so in the future. The real problem, underscored by our recent experience in supporting our Southeast Asia deployments, concerns the availability of these U.S. Flag merchant ships to the Defense Department on a timely basis.

For the past year and a half, we have been engaged in a massive sealift of men and supplies to Vietnam. In the first quarter of FY 1967, the Military Sea Transportation Service (MSTS) exceeded its FY 1965 average quarterly shipping rate by 165 percent. However, only about a third of the increase was obtained from the U.S. liner fleet (both subsidized and unsubsidized). These, of course, were the ship operators who had been given preference in carrying peacetime Defense cargoes, who up until recently (when MSTS introduced competitive bidding) had collectively negotiated freight rates with MSTS, and on whom Defense had traditionally counted for the "hard core" of its sealift augmentation in wartime. But, when the heavy demands for sealift to Southeast Asia began to develop, most of the liner operators chose to continue to ply their normal commercial trade routes, and in the July-September 1966 period only eight percent of the subsidized fleet and something less than 10 percent of the non-subsidized liner fleet were under charter to

MSTS. This choice was understandable under the circumstances. In a total war, neither the Government nor the shipline operators would have any choice, the ships would be requisitioned. But in a limited war, such as Vietnam, the issue is not as clear; the shipline operators, understandably, don't want to lose their place on the world trade routes and the Government doesn't want to be forced to requisition the ships it needs.

Fortunately, in the present situation, we have been able to obtain the needed sealift without recourse to requisitioning, principally through the use of the unsubsidized tramp fleet and through reactivations from the reserve fleet (NDRF). Almost two-thirds of the increase in Defense sealift capacity achieved since the start of the Vietnam buildup has come from these sources. . . .

While these resources have successfully met the needs of the present emergency, they may not all be available in another emergency a decade hence. By 1975, most of the ships in the NDRF will be 30-35 years old and will require larger expenditures for conversion to assure satisfactory reliability. Moreover, the unsubsidized tramp/irregular fleet will probably have disappeared because its aging World War II vessels cannot be replaced at an economical price. As a result, the Defense Department may in another emergency be far more dependent on the subsidized berth line operators than it is today.

The greater requirement for berth line ships is disturbing not only because of the problem of responsiveness but also because of the cost implications involved. We know from past experience (and we cannot realistically expect it to be otherwise) that, unless the operators are assured a good profit (at prices established in a tight market), their ships will not be forthcoming voluntarily in an emergency. This makes the subsidized liner fleet a very costly form of sealift for the Defense Department to hire, just when it needs it most.

Furthermore, U.S. Flag ships are twice as expensive to operate, even in normal times, as most foreign flag ships. And, as I mentioned earlier, ship construction in U.S. yards costs about twice as much as that abroad. To offset these cost differentials, the

U.S. Merchant Marine is subsidized by the taxpayer, directly and indirectly, to the tune of nearly three quarters of a billion dollars a year—on the premise that this shipping is required for potential national security needs. Yet, despite this large annual subsidy, virtually all our sealift needs since World War II have been met without requisitioning merchant ships. Moreover, it seems clear that the most likely requirements for sealift augmentation in the future will be associated with limited war situations like Vietnam, in which recourse to requisitioning will be as undesirable as it seems today.

In summary, from the viewpoint of the Defense Department, there is a firm requirement for reliable, responsive sealift augmentation for a wide range of limited war situations, a requirement which the present subsidized U.S. liner fleet, for various reasons, has not met. Various solutions have been suggested, ranging from a major increase in the subsidized U.S. Flag merchant fleet to a full scale program of reserve fleet modernization. I do not propose to offer a solution at this time; other agencies of the Government are also involved. I believe a way can be found to revitalize both the American shipbuilding industry and the U.S. Merchant Marine and make them both more truly competitive in the world markets—and I believe that these objectives, along with our military requirements, can be met at costs lower than those our nation is incurring today.

Airlift

The airlift forces currently planned through FY 1972 are shown on the classified table provided to the Committee. In the active forces, the C-5A deployment schedule is the same as that envisioned a year ago with the first two squadrons scheduled to become operational in FY 1970. The first operational aircraft were included in the current year's procurement program and \$423 million is included in the FY 1968 request for the next increment. The total C-5A program cost (including research and development and facilities construction) is estimated at \$3.4 billion. . . .

Last year we had tentatively scheduled the phase-out of the C-133

fleet from the active forces in FY 1971. However, in order to maintain the squadron integrity of the Military Airlift Command's force structure, we now plan to phase out the last two squadrons of C-133's as the last two C-5A squadrons become operational.

We also plan to retain one additional C-124 squadron (16 UE aircraft), previously scheduled to be phased out this year, through FY 1968. . . .

The C-141 force will reach its planned strength of 14 squadrons in FY 1968 and is scheduled to hold at that level throughout the program period.

Before the end of FY 1967, we plan to reorganize the existing C-130 fleet within a force structure of 28 squadrons rather than the 31 previously planned. . . .

As a result of an Army-Air Force agreement in April 1966, which re-delineated certain air support mission responsibilities within the combat theater, the Army's CV-2 Caribou transports (redesignated the C-7A) have now been transferred to Air Force operation and are, therefore, accounted for in this program for the first time.

No major changes are contemplated in the airlift force structure of the reserve components from that proposed a year ago. In FY 1968, we proposed to continue one C-121 squadron and one more C-97 squadron than planned last year. . . . Eventually, the reserve airlift force will consist entirely of C-130's. During FY 1968, we propose to continue the 100 percent manning for the 11 Air Force Reserve C-124 squadrons, which was inaugurated as a readiness measure in the summer of 1965.

Sealift

As discussed earlier in this section, we propose to build a fleet of Fast Deployment Logistic (FDL) ships. The Congress approved funds (\$67.6 million) for two of these ships in FY

1966, including \$10 million in the FY 1966 Supplemental for the initiation of contract definition. As I explained a year ago, actual contracts for these first two ships are being deferred in order to permit their inclusion in the "total package" contract. We now plan to award the multi-year contract late this fiscal year. Funds for five FDL's are included in the FY 1968 request. . . .

The FDL's we now propose will be considerably larger, faster and more efficient ships than those we originally envisioned. Two years ago, the preliminary FDL concept called for a vessel capable of carrying about 5,600 tons of division equipment and supplies; the ships we are now considering will be able to carry perhaps twice that tonnage and at an estimated increase in the cost per ship of less than 10 percent.

As I noted earlier in the discussion of the shipbuilding problem, the FDL program represents the first application of the concept formulation and contract definition process and the "total package" approach to ship procurement. The first phase of this approach, "concept formulation," was completed in July 1966 when three contractors were awarded definition contracts. During the first phase of contract definition, the competing contractors prepared their initial proposals around Army and Navy performance requirements and standards instead of detailed ship specifications. Thus, for the first time, the talents of private industry are being brought to bear on the initial design of the ship. During the second phase of the definition process, which has just been completed, the three competing contractors prepared detailed proposals for their design and a comprehensive program plan for their production. As part of these detailed proposals, each of the contractors has developed plans for a new shipyard or modernization of an existing one. Any one of these, in terms of efficiency, would be far superior to the existing U.S. yards and in terms of design and

layout would be equal to the best of the foreign yards.

We are now in the last stage of the definition process, i.e., bid evaluation and source selection. . . .

The three Victory-class cargo ships which had been used as forward mobile depots since FY 1963 have been temporarily converted to point-to-point service in support of our current effort in Southeast Asia. Our plans now call for retaining these ships in this role through the end of FY 1968. Subsequently, with the end of the Vietnam conflict, we would expect to return them to their forward mobile depot role and add more ships for this mission. The Victory ship fleet would be retained until a sufficient number of the more efficient FDL's became available in FY 1972.

During FY 1966, MSTs operated in the nucleus fleet an additional general purpose cargo ship to help meet the increased requirements of our Southeast Asia operation. Tentatively, we now plan on retaining this ship through FY 1968, after which the active general purpose cargo fleet is scheduled to decline. Another minor change in last year's planned deployments resulted from the fact that one roll-on/roll-off ship which had been expected to enter service in May or June 1966 has been delayed.

With respect to special purpose cargo ships, the temporary Vietnam augmentations which I described a year ago have now been extended through FY 1968. In addition, MSTs will operate 13 more LST's in FY 1967 than envisioned last year and 14 more through FY 1968. After FY 1968, the special purpose cargo fleet is tentatively scheduled to return to the pre-Vietnam level. . . .

Financial Summary

The Airlift and Sealift Forces I outlined will require Total Obligational Authority of \$1.6 billion in FY 1968. A comparison with prior years is shown below:

(\$ Billions, Fiscal Years)							
	1962	1963	1964	1965	1966	1967	1968
	Actual	Actual	Actual	Actual	Actual	Est.	Proposed
Total Obligational Authority -----	1.1	1.1	1.2	1.4	1.7	1.5	1.6

Research and Development

Included in this major program are all the research and development efforts not directly identified with weapons or weapon systems approved for deployment. We have made a special effort again this year not only to cull out marginal projects in the research and development program, but also to defer to future years all projects whose postponement would not have a serious adverse effect on our future military capabilities. But even while we have eliminated, reduced and deferred projects in some areas of this program, we have had to add, increase and accelerate projects in other areas, to meet new needs growing out of the conflict in Southeast Asia and the military situation generally.

Last year I described Project PROVOST (Priority Research and Development Objectives for Vietnam Operations Support) which we had established to ensure that the research and development program related to limited war situations, which had been accelerated in prior years, would be wholly responsive to the more specific requirements of our forces in Southeast Asia. As a result of PROVOST, projects totaling about \$370 million were identified as having significant potential for Vietnam operations and were singled out for priority funding in FY 1966. During the past year, the test of combat in Vietnam has revealed a number of areas where still more effort appears warranted. These newly identified requirements have been an important influence in the formulation of our FY 1968 request. However, most of this work should be started promptly, and thus also concerns the current year's research and development program. While a portion of it has been financed by reprogramming or use of emergency funds, we have had to request an additional \$135 million for research, development, test and evaluation (RDT&E) in the FY 1967 Supplemental.

Broadly speaking, the projects funded in the Supplemental can be grouped into three main categories. The first is concerned with improving the ability of our forces to fight at night. The second is concerned with reducing our aircraft losses. The third is concerned with the development of

improved counterinfiltration systems. As described later, the proposed FY 1968 program provides for additional effort in all of these areas. . . .

Before I turn to the specifics of the FY 1968 Research and Development program, there are two general areas which might usefully be discussed as entities rather than in terms of the separate projects which they comprise. These are nuclear testing and test detection, and space development projects.

Nuclear Testing and Test Detection

As you know, the Defense Department, in cooperation with the Atomic Energy Commission (AEC), is maintaining four specific safeguards with relation to the Test Ban Treaty. For the Defense Department's portion of this program, we have budgeted a total of \$255 million for FY 1968, compared with \$224 million in FY 1967 and about \$238 million in FY 1966, as shown on the classified table provided to the Committee.

In support of the first safeguard—the underground test program—we have included \$49 million in the FY 1968 Budget, compared with the \$33 million provided in the FY 1967 program. . . .

In support of the second safeguard—maintenance of modern nuclear laboratory facilities and programs in theoretical and exploratory nuclear technology—our FY 1968 Budget includes \$63 million as compared with the \$53 million in FY 1967. . . .

The FY 1968 Budget includes about \$27 million in support of the third safeguard—the maintenance of a standby atmospheric test capability—about the same as FY 1967. . . .

In support of the fourth safeguard—the monitoring of Sino-Soviet nuclear activities—we have included a total of \$116 million in the FY 1968 Budget, compared with \$111 million in FY 1967. We conduct two principal programs to support this safeguard—the Advanced Research Project Agency's VELA program and the Atomic Energy Detection System (AEDS).

. . . The FY 1968 Budget includes \$50 million for VELA activities. . . .

The present Atomic Energy Detection System (AEDS), designed to detect and identify nuclear detonations, now represents a facilities investment of about \$85 million. . . .

About \$58 million was provided in the FY 1964–67 budgets for this effort and \$16 million is included in the FY 1968 request. An additional \$46 million will be needed in FY 1968 for the RDT&E and operating costs of the system.

Space Development Projects

While the various elements of the Defense Department's space effort are spread, on a functional basis, throughout the program and budget structures, I believe this effort can be more meaningfully discussed as a separate entity.

The Defense Department's program is, of course, wholly integrated into the larger National Space Program, expenditures for which now total over \$7 billion a year. The Defense portion is designed to maximize the utilization of space technologies and environments for defense purposes, e.g., to apply space technologies and capabilities to our strategic and tactical weapon systems to increase their effectiveness, to exploit the new potentials in information systems made possible by satellite-based communications and sensors, and to explore the usefulness of manned space systems for defense purposes. . . .

In total, about \$1,998 million of our FY 1968 Budget request is for the space program, \$328 million more than in FY 1967.

Spacecraft Mission Projects.

By far the largest project in this category is the Manned Orbiting Laboratory (MOL), for which we are requesting \$431 million in FY 1968. . . .

A total of \$83 million is requested in FY 1968 to continue work on Defense Satellite Communications programs and to procure, operate and maintain satellite communications equipment. . . .

Of the \$83 million requested for Satellite Communications programs in FY 1968, about \$17 million is for the development, procurement and operation of Army ground terminals; \$13 million is for Navy shipboard terminals; and \$49 million is for Air Force space subsystems, airborne ter-

minals, launch vehicles, and the costs of procuring and launching new satellites. In addition, \$3 million is for the Defense Communications Agency for overall systems engineering and management direction.

I have already discussed the next item, "Nuclear Test Detection (VELA)," in connection with the Test Ban Treaty safeguards. The FY 1968 Budget includes about \$8 million for this program.

We are requesting \$18 million for the Navy's satellite navigational system. . . .

Research and development funding for the anti-satellite system program has been completed. The funds requested for FY 1968 will provide for the normal operating costs of the system.

The funds requested for space "Geodesy" will support programs by each of the Services as well as the Department of Defense's participation in the National Geodetic Satellite Program. . . .

Vehicle, Engine and Component Developments.

The Titan III family of space boosters has begun to enter the operational inventory. The first Titan IIIB (Agena configuration) was launched last July and production is now proceeding. The Tital IIIC has been in the flight test phase since June 1965 and is being used to launch the Initial Defense Communications Satellite, VELA, Tactical Communications Satellite, and multiple engineering payloads.

The funds requested for "Agena D" will continue work being initiated this year to increase the capability of the standard Agena D for the heavier satellite payloads now projected. . . .

The funds requested for "Spacecraft Technology and Advanced Reentry Tests (START)" will complete the present phase of this program. . . .

The funds requested for "Advanced Space Guidance" will support an ongoing program of studies, experiments and equipment development in such areas as long-term accuracy and reliability of inertial guidance components, horizon sensors and star and landmark trackers, and on-board determination of astronomical data for autonomous navigation. The FY 1968 program includes procurement of an inertial reference unit (which will serve as an instrumentation standard

for the sensors) and other navigation components, which will then be flight tested.

The "Large Solid Propellant Motor" project was undertaken to create the technology base required for the development of missile or launch vehicle engines up to 156 inches in diameter. Funds already provided will be sufficient to complete the remaining tasks, i.e., demonstrations of a low cost nozzle, an advanced thrust vector control system, and a self-eject launch concept.

The next item, "Advanced Liquid Rocket Technology" comprises three projects: advanced storable liquid rocket technology; high performance, cryogenic liquid rocket technology; and maneuverable space rocket technology. . . .

Other Defense Activities Supporting the Space Program.

The Ground Support category shown on the classified table supplied the Committee is that portion of the costs of the missile range, test instrumentation, and satellite detection and tracking systems which is charged to space activities. The largest item in this category is the \$132 million for the Eastern Test Range.

. . . The FY 1968 request includes \$34 million for support of SPACETRACK and \$5 million more for SPASUR, for a total of \$39 million.

The \$57 million requested for the "Satellite Control Facility" is for operation, maintenance and modification of the military space vehicle support network which provides satellite tracking, command and data handling, as required by the major Defense space programs. . . .

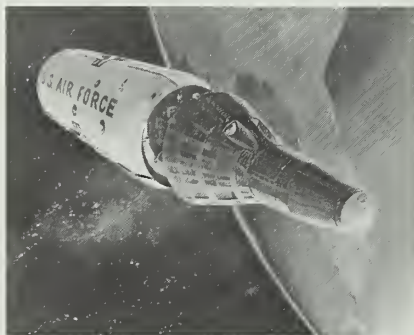
The last two categories on the table, "Supporting Research and Development" and "General Support," constitute the overhead of the military space program and consist of prorated por-

tions of the costs of a wide range of space-related activities. . . .

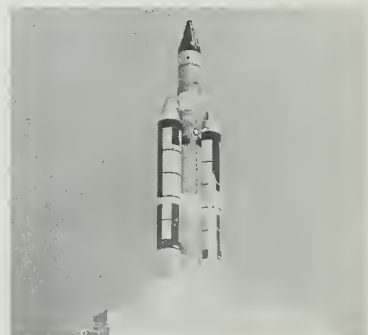
Research

Last year I discussed in considerable detail the problems involved in organizing and managing a Research program consisting of literally thousands of individual tasks and projects, most of which require relatively small amounts of money for their support. I pointed out that because of the large number and relatively small dollar value of these projects, we had to manage the program from my office on a "level of effort" basis, with the objective of advancing our knowledge in a balanced manner across the entire spectrum of science and technology pertinent to the Defense effort. To facilitate the management of the program and to insure that it is always responsive to changes in our fields of interest, I noted that we had organized the overall effort primarily in terms of disciplines, i.e., materials, general physics, chemistry, oceanography, etc., and that the effort in each discipline was allocated among the components of the Department on the basis of their 'primary fields of interest and competency. . . .

Shown on Figure 1 is the Research program proposed for FY 1968, compared with prior years. You will notice that there is a sharp reduction in the amount of funds allocated to Materials Research and to a lesser extent for In-House Laboratory Independent Research. In both cases, the amounts of unobligated and unexpended funds exceed the levels dictated by prudent management. Accordingly, the amount of new funds requested for FY 1968 has been reduced below the actual program levels which will be about the same as in FY 1967. . . .



Manned Orbiting Laboratory (MOL)



U. S. Air Force Titan IIIC

Included in the FY 1968 request for research is \$27 million for the Defense Department's share of the national program for developing "New Centers of Excellence in Science and Technology". This program, previously referred to as the "University Program" and now called THEMIS, is in addition to our regular contract/grant arrangements with institutions of higher learning and is not a substitute for them. Rather, the new program is designed to create, eventually, about 100 new departmental centers of superior scientific and engineering competence at universities which are, at present, poorly supported. Patterned after the Joint Services Electronics Program, from which significant technical advances like the laser evolved, this new effort holds great promise of yielding a similar "pay-off" in the future.

We have initiated Project THEMIS this year at a level of \$18 million, and have supplied interested colleges and universities with detailed information on our requirements. . . . Additional centers will be started in FY 1968.

Exploratory Development

Exploratory development is directed toward the expansion of technological knowledge and its exploitation in the form of materials, components and devices which it is hoped will have some useful application to new military weapons and equipment. Here the emphasis is on invention and on exploring the feasibility of various approaches to the solution of specific problems, up to the point of demonstrating feasibility with a "bread board" device and even, in some cases, prototype components and subsystems.

Along with research, exploratory development forms the technological pool from which future equipment will be designed.

The more than 800 individual exploratory development projects represent about 15 percent of the cost of the entire RDT&E program, with the average project requiring about \$1.3 million annually. About 40 percent of exploratory development work is conducted by our "in-house" laboratories, 50 percent is contracted to industry, and the remaining 10 percent is performed by educational and non-profit institutions. A recent study of the origin of weapon system performance improvements has shown that almost all have resulted from Defense supported technological advances and very little from other sources.

As shown on the classified table provided to the Committee, we are requesting a total of \$988 million for exploratory development in FY 1968, \$65 million less than the revised estimate for FY 1967.

Army.

For the Army's exploratory development program, \$216 million is requested for FY 1968, somewhat less than the level planned for FY 1967.

In the areas of electronics and communications, the development effort includes: small rugged field operated digital data processing equipment; communications equipment having increased traffic handling and improved anti-jamming capabilities; devices for rapid, positive and automatic recognition and identification among friendly surface units and between them and their supporting air units; new sensors for airborne and ground surveillance and target acquisition of enemy units on the battlefield; communication sets and variable time fuzes; night vision devices; improved solid state, thermionic and frequency control components common to a variety of equipments; etc. Efforts in the ordnance category include work on weapon systems for Army helicopters, the improvement of missile components, and development of conventional ammunition, weapons and explosives.

In the materials category, the Army is concerned with the development of new metals, ceramics, plastics and composite materials which can improve its firepower, mobility, armor and communications, with particular

SUMMARY OF THE RESEARCH PROGRAM

Fiscal Years
(TOA, \$ Millions)*

	1962	1963	1964	1965	1966	1967	1968
Engineering Sciences							
Electronics			26	27	28	28	27
Materials			34	44	45	47	33
Mechanics			25	26	29	29	28
Energy Conversion			12	14	14	15	14
Sub-Total			97	111	116	119	102
Physical Sciences							
General Physics			28	30	33	30	30
Nuclear Physics			15	17	15	16	13
Chemistry			10	11	11	11	11
Mathematical Sciences			33	35	37	38	37
Sub-Total			86	93	96	95	91
Environmental Sciences							
Terrestrial			6	6	7	6	6
Atmospheric			19	20	19	21	22
Astronomy-Astrophysics			8	9	10	10	9
Oceanography			18	19	19	20	22
Sub-Total			51	54	55	57	59
Biological & Medical Sciences			34	33	33	34	32
Behavioral & Social Sciences			9	10	12	13	12
Nuclear Weapons Effects Research			36	38	39	41	43
In-House Independent Lab. Res.			35	39	35	36	34
University Program (THEMIS)						18	27
Other Support				8	7	7	8
Total Research	339	351	346	383	391	415	409

* Amounts will not necessarily add to totals due to rounding.

Figure 1.

emphasis on high strength, lightweight materials for use in the field. . . .

Navy.

The Navy's exploratory development effort in FY 1968 will require \$272 million, compared with \$283 million now estimated for FY 1967. Approximately one-third of the Navy's program is devoted to improving the design of ships, aircraft and other "sea based" warfare systems, including: higher performance, lower cost nuclear propulsion systems for surface ships and submarines; sea based countermeasures to help protect ships against mines, torpedoes, air-to-surface missiles and nuclear attack; and better shipboard radar and sonar equipment to improve target acquisition, surveillance and navigation. A large number of projects are directed toward developing new or improved materials, equipment and designs for ships; in the past, these efforts have produced the "captured air bubble" craft, hydrofoil craft and ship hulls for penetrating heavy ice formations.

Another large share of the Navy's program is concerned with electronics and communications, in particular with improving the performance and reliability of complex sea-based electronic systems which are subject to extreme variations in temperature, humidity and shock. New surveillance, navigation and communications equipment for Navy aircraft is also of major interest.

A third major area, "Ordnance," comprises a large number of projects in such areas as antisubmarine warfare, mine warfare, air- and shipboard-launched ordnance as well as component work in propulsion, fuzes, explosives, pyrotechnics, ballistics, and infrared and laser devices.

Air Force.

Previously, the Air Force had budgeted separately for the supporting laboratory expenses associated with the exploratory development program. As part of an overall restructuring of its exploratory development program, these expenses have been prorated to the over two hundred individual projects which the laboratories support. The other Services have been prorating their laboratory costs for a number of years.

A portion of the Air Force's exploratory development program, for which \$285 million is requested in FY 1968, will again be devoted to space

investigations and space-related projects. Each of the categories, except for ordnance, includes some space-related projects. For example, a large share of the funds for "Chemical Technology" will be devoted to the development of propellants and propulsion systems for missiles and rockets, and hence for space boosters. "Aeronautics" includes projects which cover the entire speed/altitude regime from V/STOL flight to space and reentry technology. These projects are directed toward developing the technology and understanding for extending Air Force operations into new operational environments such as hypersonic flight, for improving the capabilities of present aircraft, and for reducing the cost of future aircraft developments.

As a part of the reorganization of the Air Force's exploratory development program, a "Bioastronautics" category was created, embracing the Air Force's effort in the life sciences, aviation medicine, and machine-environmental systems support for aircraft and space activities. The funds requested for this category will support the activities of the seven Aerospace Medical Division laboratories, as well as development of the life-support systems for the Manned Orbiting Laboratory.

The closely related areas of communications, electronics and avionics account for about one-third of the Air Force's program, while only a relatively small effort is conducted in the area of conventional ordnance. With respect to "materials," the Air Force is exploring new composites having enhanced radiation and blast, and X-ray resistance; metals with improved strength and stiffness; and sealant and elastic materials formed from the new polymers. . . .

Advanced Research Projects Agency (ARPA).

ARPA operates as a small research and development management team, supervising its Service-conducted programs by overall financial control and technical direction. A total of \$215 million is included in the FY 1968 Budget for ARPA's projects in exploratory development, compared with \$231 million in FY 1967 and \$225 million in FY 1966.

Project Defender. The Defender program is the principal exploratory

development effort designed specifically to provide the missile and reentry technology associated with strategic defensive and offensive systems, and to develop concepts for advanced defensive systems against ballistic missile attacks. In FY 1968, a substantial portion of the \$118 million requested for this project will be devoted to missile reentry and midcourse phenomenology. . . .

Project Vela. Project Vela has already been discussed in connection with the Test Ban safeguards program. For FY 1968, \$50 million is requested, slightly more than in the current fiscal year.

Project Agile. For FY 1968, \$27 million is requested for Project Agile, about the same as FY 1967. This is our basic research and development effort oriented to the special problems of remote area conflict with particular reference to the requirements of insurgency warfare. . . .

Advanced Development

This category includes projects which have advanced to a point where the development of experimental hardware for technical or operational demonstration is required prior to the determination of whether the item should be designed or engineered for eventual Service use. In contrast to engineering development where design specifications are employed, advanced development permits the use of performance specifications which allow the engineer greater latitude in meeting operational needs, thereby encouraging innovation. A total of \$1,250 million is requested for advanced development in FY 1968 compared with \$922 million in FY 1967 and \$807 million in FY 1966. The sharp increase in FY 1968 reflects the growth of a few major projects, most notably MOL.

V/STOL Developments.

The first two items under Army "Advanced Development" are related to the Defense Department's total V/STOL effort in which all three Military Departments are participants. For a number of years, the Department has been developing a variety of vertical and short take-off and landing (V/STOL) aircraft. This program has focused on the construction of prototype aircraft suitable for operational testing by all three Serv-

ices. The present status of this program is recapitulated below:

- The XC-142A, a tilt-wing turbo-prop transport with a cruise speed of 250 knots, a combat radius of 200 n.mi., and a 4-ton payload, has been undergoing technical and operational evaluation by a tri-Service test group with some participation by NASA and the FAA. . . . The \$3 million requested for "Tri-Service V/STOL" in FY 1968 (under Air Force Advanced Developments) should complete funding of the test program. These aircraft are approaching their maximum safe life of 300 flight hours and costly life extension modifications would not be warranted. . . .

- The X-22, a Navy monitored tri-Service V/STOL research and development project, is a twin tandem, tilting-duct, fan-powered flight vehicle, which closely simulates the characteristics of conventional aircraft and was designed to provide technical data on stability and control criteria for V/STOL aircraft generally. . . . The \$2 million in the FY 1967 Budget will be sufficient to complete the presently scheduled DOD test program for the X-22. The remaining aircraft may then be turned over to NASA for further testing.

- The XV-6A (P-1127) is a British designed, lightweight V/STOL strike-reconnaissance aircraft, first flown in October 1960. A total of nine test aircraft were constructed under a joint program with the United Kingdom and Germany. The tripartite evaluation of the aircraft was terminated in 1965, although the United States continued to conduct operational tests of its six aircraft until July 1966. Two of these aircraft have been turned over to NASA while the other four will be held by the Air Force pending evaluation of further testing proposals.

- Two XV-4A's, an augmented jet

lift aircraft, were tested by the Army until May 1965. One aircraft was lost during the testing period and the other, which was turned over to the Air Force, will be modified with direct lift and diverted thrust engines and designated the XV-4B. It is to be utilized in the Air Force's VTOL integrated flight control program.

- The second of two XV-5A's, an experimental fan-in-wing aircraft, crashed last September while being operationally evaluated as a rescue aircraft. (The first crashed in April 1965.) All of the remaining assets associated with the program have now been transferred to NASA.

- Another V/STOL effort just getting under way is the joint development of a strike fighter aircraft with the Federal Republic of Germany. The \$3 million provided in FY 1967 should complete the financing of the configuration (i.e., contract) definition phase. At present, this effort is directed to V/STOL technology rather than full scale engineering development. Each nation will make its own decision concerning production. Since a decision on prototype development cannot be made until we have thoroughly reviewed the configuration definition results (now scheduled for completion in October 1967), no additional funds have been requested for FY 1968, although they would be needed if the program were continued.

- The Army's "New Surveillance Aircraft" project is now a continuing long-range study effort concerned with the determination of desirable characteristics of a reconnaissance and surveillance aircraft for the mid-1970's.

In summary, we are now coming to the close of the current phase of our V/STOL development effort. . . . For this reason, our overall effort on V/STOL development will decline in

FY 1968, although the Services will continue to re-examine the results of these programs and how these may be applied to future aircraft needs. In any event, it appears that a great deal of research and experimental work, particularly on propulsion systems, remains to be done before we will be ready to undertake full scale engineering development of a V/STOL aircraft. NASA, of course, will continue its research and development effort in the V/STOL area.

Army.

I have already discussed the first two items on the Army's list of advanced developments, ("Operational Evaluation V/STOL" and "New Surveillance Aircraft). No additional funding is needed for the third item, "Heavy Lift Helicopter." This is the CH-54 "flying crane" which is now in operational use in Vietnam.

Funds are requested for the "Research Helicopter" in FY 1968. . . . The FY 1968 funds will be used to build wind tunnels and dynamic scale models of the stowed- and tilt-rotor versions. The program is oriented primarily to the development of technology which will yield an efficient aircraft that will both hover and have a flight speed of about 400 knots.

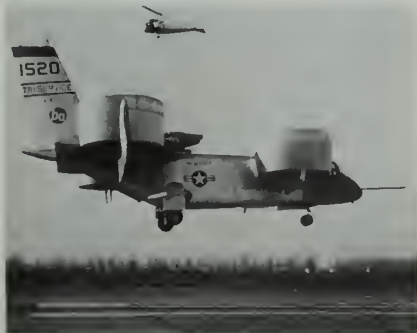
The funds requested for "Aircraft Suppressive Fire Systems" is for work on improved helicopter-borne weapons for our forces in Vietnam, including evaluation of various fire control systems, guns, missiles and rockets. About half the funds will be used for feasibility demonstrations of presently available missiles and rockets, and most of the balance on advanced fire control systems and optical sighting devices.

The next item, "Automatic Data System/Army in the Field," covers the development of electronic data processing (EDP) equipment needed to help maintain and analyze data for the field commander regarding the current tactical status of his own and enemy units and of his various tactical plans and alternatives. . . . Contracts for initial equipment have been awarded and the Army plans to begin field experiments with the Seventh Army in Europe.

The SAM-D, for which funds are requested in FY 1968, is an advanced surface-to-air missile system previously mentioned in connection with both the Strategic and General Pur-



Tri-Service XC-142A



Tri-Service X-22A

pose Forces. . . . SAM-D is now in contract definition phase which will be completed this spring. We will then have to decide whether to proceed directly with development of an integrated system suitable for direct operational deployment, to limit development to a prototype system for feasibility demonstration, or to return to concept formulation. The second option would provide additional time to incorporate still more advanced technology and lead to demonstration tests. The first option would lead to full service tests. The funds requested will support any option. The major remaining task is to integrate into a working model a number of components, the feasibility of which has already been verified on an individual basis. The SAM-D program is closely related to the Navy's Advanced Surface-to-Air Missile System Program and the development of the respective subsystems and components is being fully coordinated by the two Services.

The \$6 million of "DOD Satellite Communication, Ground" covers the Army's portion of the Defense Satellite Communications programs, which were discussed earlier.

The \$20 million requested for "Nike-X Advanced Developments" will finance development of those advanced components whose lead times would not permit their incorporation in an early deployment of the system. This work fills the gap between the engineering development effort and the development of completely new hardware for possible use later.

The \$5 million requested for "Anti-tank Weapons" will provide for the evaluation of new anti-tank missile concepts. Present efforts are directed toward identifying those system characteristics which together seem to offer the best chance of achieving an effective low cost anti-tank weapon.

The funds requested for the "Light-weight Howitzer" will support the development of a 155mm self-propelled weapon. Development of the system is being coordinated within NATO, with the United States, France, Germany and Canada all participating in designing the ammunition. . . .

The "Limited War Laboratory," for which \$7 million is requested in FY 1968, is the Army's quick reaction research and development facility for counterinsurgency operations. . . .

The "Therapeutic Developments" program was initiated in calendar year 1965 in response to the drug-resistant falciparum malaria which was causing such a serious problem for our forces in Southeast Asia. The \$11 million requested will continue the development and testing of new antimalarial drugs. . . .

The next item, \$12 million for "Power System Converters," consists of four major categories of projects directed toward the development of engines, transmissions, final drives, and related components for combat and tactical vehicles. These categories are: power conversion for track and wheel vehicles; multi-fuel, variable compression engines; spark ignition engines; and rotary combined cycle power systems.

The funding requested for "Night Vision" reflects the increasing importance of night operations in modern warfare. Among the many types of equipment now under development are starlight scopes, small portable radars and special goggles.

The last item on the Army's list, "Airborne Surveillance and Target Acquisition," is also in large part concerned with the problems of night operations. One of the major efforts in this program is aimed at providing a better night reconnaissance capability.

Navy.

The first item on the Navy's list, "V/STOL Development," represents the Navy's current participation in the tri-Service V/STOL program previously described.

The next item, "Airborne Electronic Warfare Equipment," for which funds are requested, is a multi-project effort aimed at developing active (jamming) and passive (signal interception)

electronic warfare equipment required by the Navy.

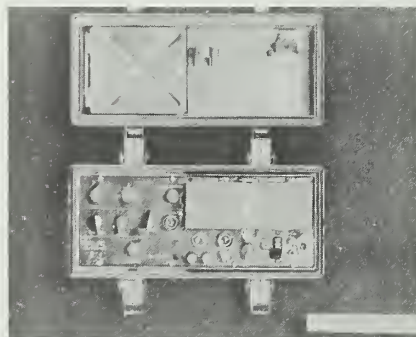
The "Advanced Surface-to-Air Missile System (ASMS)" is the new automated integrated air defense system being developed as a possible replacement for the Terrier-Tartar-Talos (3-T) systems. . . . As mentioned previously, we are seeking in this development to maximize the use of the technology, components and subsystems developed for the Army's SAM-D system. As a result, the ASMS program must lag behind the SAM-D development by about one year. With the completion of SAM-D contract definition in this fiscal year, we will be able to decide which elements should be used on both systems. This will allow us to initiate ASMS contract definition by late FY 1968.

The funds requested for the "Advanced Point Defense Surface Missile System (Advanced PDSMS)" program will support the development of a replacement for the Basic Point Defense System (modified Sparrow III) now being deployed. . . . This development is being closely coordinated with the Army's Advanced Forward Area Air Defense System (AFAADS) program to maximize the common use of technology and components. The funds requested will support contract definition of the Advanced PDSMS in FY 1968.

The funds requested for "Advanced ARM Technology" will support preliminary development work on advanced anti-radiation missiles.

The funds requested for the "Landing Force Support Weapon (LFSW)" will complete feasibility testing of the Army Lance missile adapted to a sea-borne role for support of amphibious assault operations. . . .

The "Augmented Thrust Propulsion" program, for which funds are



Radio Set AN/PRC-64—A product of Limited War Laboratory program.



Starlight scope developed for night viewing.

requested in FY 1968, seeks to advance propulsion technologies for both strategic and tactical missiles in order to increase payload and/or range.

Grouped under "Astronautics" are several Navy programs, which I described earlier, relating to satellite communications and the potential use of navigation satellites by the tactical forces. We are requesting a total of \$6 million for these programs in FY 1968.

The next group of items under Navy advanced developments are concerned with antisubmarine warfare (ASW) and the deep submergence program. The FY 1968 Budget includes a total of \$356 million for ASW RDT&E, \$126 million in advanced developments.

The first item, "Advanced Undersea Surveillance", includes three ASW surveillance projects.

The next two items involve the development of new sonars. The first, the "Advanced Submarine Sonar" program, consists of three efforts: a new submarine sonar, investigations in submarine acoustic communications, and the testing of a sonar for deep-diving auxiliary submarines. The "Advanced Surface Sonar" program provides for the development of a passive/active sonar to detect, localize, classify and track submarines (PAD LOC). . . .

The next item, \$42 million for the "Deep Submergence Program", is one of the more important efforts in terms of its potential impact on future Navy programs. This program consists of three separate but closely interrelated projects: the Deep Submergence System Project (DSSP), Deep Research Vehicles (DRV), and Deep Ocean Technology (DOT). . . .

No further funding is requested for the "Combined Gas Turbine Propul-

sion" program, pending further study of the results achieved to date.

The "Active PLANAR Array Sonar" is concerned with the development of an experimental integrated ship sonar system. . . .

The "ASW/Ship Integrated Combat System" consists of two efforts: ASW Command and Control, and ASW Integrated Combat System (ICS). . . .

The next item, \$13 million for "Reactor Propulsion Plants," will consist of three concurrent efforts in FY 1968: the development of a "natural circulation" power plant, a small combatant ship reactor, and a more powerful reactor for use in aircraft carriers. . . .

The "Advanced Surface Craft" consists of advanced development projects for three different types of surface ships, for which a total of \$10 million is requested in FY 1968. The first effort, "Surface Effect Craft" (e.g., air cushion vehicles and captured air bubble ships), is to acquire the technology and design capability needed to build large high-speed "surface effects" ships. . . . In the second effort, "Hydrofoil Craft", we have built a 110-ton, 45-knot patrol craft (PCH) and have a 300-ton, 50-knot hydrofoil auxiliary ship (AGEH) over 90 percent complete. . . . The third effort, "Landing Craft", is concerned with the development and test of high speed amphibious and assault landing craft concepts. . . .

Air Force.

The first five items on the Air Force list of advanced developments are all part of the V/STOL technology program which was discussed earlier.

Last year, we programmed \$3 million for FY 1967 to support preliminary work on a new "V/STOL Assault Transport." We have recon-

sidered the requirement for this type of aircraft and decided that it is premature to settle now on a specific design. Therefore, the project has been renamed "Light Inter-theater Transport" and will be concerned with the development of a new aircraft to replace eventually the CV-2 (Caribou) and similar small transports. The \$2 million requested in FY 1968 will be used for preliminary study of possible designs including V/STOL aircraft.

The FY 1967 funds for "V/STOL Aircraft Technology" will, as previously described, support contract definition of a new V/STOL fighter aircraft, a project jointly financed with the Federal Republic of Germany.

No further funding is required for the next item, "Lightweight Turbojet," which was principally concerned with demonstrating light turbine engines for V/STOL aircraft.

The \$3 million requested for "Tri-Service V/STOL" development will continue operational testing of the XC-142A aircraft, as I noted earlier.

The next item, \$20 million for "V/STOL Engine Development," will provide for the continued work on two engines, a direct-lift engine and a lift/cruise engine or for forward propulsion. . . .

The next two items, "Overland Radar" and "AWACS," were mentioned previously in connection with their potential application to future continental defense against bomber attack. . . . The funds requested for the "Overland Radar" program in FY 1968 will support continued flight testing of radar techniques for detecting and tracking airborne targets over land in the presence of severe ground clutter and provide for development of components for still more advanced radars for future generation air early warning systems. No additional funding is requested for AWACS in FY 1968 inasmuch as the radar evaluation is not yet far enough along to warrant going forward with contract definition during FY 1968. However, funds will be available to support continued concept formulation of the "AWACS" system and contract definition if progress on the program indicates this as the logical next step.

The next item, "Advanced Avionics," is concerned with improving the night and bad weather attack capabilities of tactical aircraft. Work will be con-



Deep Submergence Rescue Vehicle



Navy Patrol Air Cushion Vehicle

ducted on visual sensors, weapons delivery subsystems, navigation equipment (doppler, inertial, loran), and an integrated radome-radar for reconnaissance fighters. . . .

The funds requested for "Penetration Aids for Tactical Fighters" will support continued work on devices and techniques for existing tactical aircraft to enable them to operate successfully in hostile radar-controlled gun and surface-to-air missile environments. . . .

The funds requested for "Tactical Air-to-Ground Missile (Maverick)" would support contract definition and initiation of engineering development in FY 1968 of a new TV-guided air-to-surface missile.

For "Conventional Weapons" development, \$5 million is requested in FY 1968. These funds will finance a number of projects designed to demonstrate the technical feasibility of advanced conventional munitions and air delivery systems, various carriage and release mechanisms, fuzing technology, etc.

The \$8 million requested for "Flight Vehicle Subsystems" in FY 1968 will support advanced development effort in two areas vital to future aircraft design. The first project consists of collecting and analyzing air turbulence data with the objective of improving the design of aircraft structures and control equipment. The second project is concerned with demonstrating the ability of current flight control technology to reduce the effects of wind gusts, aircraft maneuvers, etc., particularly in low-level flight, in order to increase structural life and crew efficiency.

The \$8 million for "Advanced ASM Technology" will support a program designed to provide a technical foundation for new and improved tactical air-to-surface missile guidance systems. The largest single project involves a new approach to the all-weather guidance problem.

The \$3 million requested for the "X-15 Research Aircraft" program will complete in FY 1968 all of the Defense Department sponsored experiments now planned. Subsequently, NASA will assume full responsibility for funding the X-15 test program.

The next item, "AMSA" will require \$26 million in FY 1968. (The \$11.8 million added by the Congress for FY 1967 will be applied to the

FY 1968 program). In FY 1968, we plan to carry on development of an engine that could be used in this and other advanced aircraft. Additional funds will be required for system integration of the avionics and to allow the airframe contractors to accommodate their designs to the engine development.

The \$8 million requested for "Advanced Filaments and Composites" will support further work in developing new high strength, lightweight materials for use in aerospace structural and propulsion systems. . . .

The next item, "Advanced ICBM Technology," has now been reoriented from a "general" technology effort to the specific support of projects most likely to aid in the selection of subsystems for the possible new ICBM discussed earlier.

No additional funding in FY 1968 is requested for the next item, "Stellar Inertial Guidance." The PACE II, a highly precise inertial navigator developed with prior year funds, is now in its evaluation phase which is expected to extend into FY 1968. After review of these test results, future follow-on efforts will be determined.

A number of the other Air Force advanced development items are space projects which I discussed earlier.

Engineering Development

This category includes those projects being engineered for Service use, but which have not yet been approved for production and deployment. Army.

A total of \$422 million has been included in the FY 1968 Budget to continue development of the Nike-X on a high priority basis, as discussed in Strategic Forces section of this statement.

One of the Army's major research and development program objectives is to have a number of ground force weapon systems in various stages of development at all times. The next item, "Firepower Other Than Missiles," for which \$49 million is requested, constitutes the bulk of the Army's effort in this area and is divided into three main categories: "Individual and Supporting Weapons;" "Field Artillery Weapons, Munitions and Equipment;" and "Nuclear Munitions."

The largest project in the first cate-

gory is the Medium Anti-tank Weapon (MAAW), a shoulder-fired 14.5-lb. missile (28 lbs. including launcher) with a shaped charge warhead. . . . Other projects in the Individual and Supporting Weapons category include a series of new ordnance signaling devices which are being engineered in response to Southeast Asia requirements and a new Vehicle Rapid Fire Weapon System, to replace the Cal. 50 machine gun and the interim HS-820 20mm cannon.

The "Field Artillery Weapons, Munitions, and Equipment" category encompasses the development of sophisticated conventional munitions and the resolution of ammunition problems associated with Southeast Asia.

The "Nuclear Munitions" category covers the development of Army supplied components for nuclear projectiles and atomic demolition munitions. Present efforts are being directed toward an advanced firing device for demolition munitions, and fuzes and cases for an improved 155mm artillery round.

The "Aircraft Suppressive Fire Support System" project, for which \$14 million is requested in FY 1968, is concerned with the development and adaptation of weapon subsystems for Army aircraft. . . .

"Other Airmobility Projects," for which \$6 million is requested, include work on aircraft engines, lightweight aircraft armor and aerial delivery equipment.

The next item, \$9 million for "Surface Mobility," comprises three efforts: "Wheeled Vehicles," "Tracked Special Vehicles" and "Marine Craft." The major project in the first category will be the initiation of engineering development for the new 1¼-ton XM-705 truck as an ultimate replacement for the current M-37 truck in rear areas. The major project in the second category will be a new armored reconnaissance vehicle capable of operations in adverse terrain and the "Mechanized Infantry Combat Vehicle-70," a replacement for the current personnel carrier. The third category includes work on shallow draft boats, a beach discharge lighter, etc.

The \$14 million for "Combat Surveillance and Target Acquisition" provides for a number of projects. The largest is the TACFIRE system in

which automatic data processing and display techniques will be used to improve the accuracy, response time and overall effectiveness of field artillery firepower. Contract definition will begin this year, with initiation of engineering development scheduled to take place next fall. Other projects include: improved sensors for the detection and location of enemy personnel, vehicles and weapons on the battlefield; airborne sensors for visual target location; a forward-looking infrared set for helicopters; image interpretation and photo processing equipment, etc.

The \$21 million for "Communications and Electronics" provides for a broad based program to improve the Army's communication, avionics and electronic warfare equipment. . . .

Navy.

The first item on the Navy's list of engineering developments is the "Medium Range Air-to-Surface Missile (Condor)". . . .

The funds requested for the "Advanced Sparrow" will substantially complete this development.

The next item, "Three-T Systems Improvements," consists of the engineering work necessary to support the updating of the three-T missiles (Tartar, Terrier, Talos) through the development of replacement components designed to increase the performance of these systems. The \$7 million requested for FY 1968 will support development of improved components for the Talos system's radar.

The \$8 million requested for "Un-guided/Conventional Air Launched Weapons" will support engineering development of a number of munitions projects: Snakeye II, a second generation retarded bomb; Fireye, an improved fire bomb using new napalm mixes and improved igniters; a hypervelocity tactical aerial rocket; an improved 20mm general purpose projectile, etc.

The next item for which we are requesting funds in FY 1968, "Multi-Mission Tactical Fighter (VFAX)," is for concept formulation of an advanced fighter aircraft. . . . Since both the Navy and the Air Force may require such a fighter, we are examining the feasibility of a joint development program. Both Services would use a power plant employing the lift/cruise engine technology.

The next five items on the list are all related to undersea warfare (USW), and total \$76 million for FY 1968.

The largest single dollar item in FY 1968 will be the "ASW Aircraft Development (VSX)". . . . The funding level proposed will support continued concept formulation and development of long lead time components of this system in FY 1968.

The next item, the "MK-48 Torpedo," is designed for use by both submarines and surface ships. . . . The MK-48 is already under contract.

The funds requested for the "Directional Jezebel" will complete the development funding of a sonobuoy capable of providing the bearing of a target directly to ASW aircraft.

The "Other Undersea Warfare Projects" for which \$19 million is requested, include, for example, a shipboard periscope detection radar, the development of antenna systems integrated into the submarine's superstructure, etc.

The "Carrier Based Airborne Tactical Control System (CBATCS)" is designed to provide a major performance improvement over the present system now carried by the E-2A. . . .

The \$14 million requested for "Marine Corps Developments", will support a number of projects on electronic systems, weapons and vehicles for the Marine Corps. Included in this program are the Marine Corps' portion of joint-service research projects such as the medium and heavy assault anti-tank weapons (MAAW and TOW), which were mentioned earlier in connection with the Army's research and development program. Another project is the development of a new landing force assault amphibian vehicle, with equally good heavy surf capabilities but better land performance than present vehicles. In the area of electronics, the overall objective is more reliable and lighter-weight equipment, e.g., a new lightweight battlefield mortar locator being developed jointly with the Army. Other projects include an automated system for integrating air support activities into the Marine Corps tactical data system; improved nuclear, biological and chemical hazard detection equipment; and a semi-automatic electronic switching facility for use by tactical units in Southeast Asia-type environ-

ments—all of which are being developed jointly with one or more other Services.

Air Force.

Many of the Air Force's engineering developments have already been discussed in connection with other programs.

The XB-70 test program has been continued following the accident last June, using the one remaining aircraft. . . . We believe that all of the truly important objectives of this test program can be accomplished with presently available funds and no further financing is requested for FY 1968.

Development funding for the next item, the "J-58 Engine," was completed in the FY 1967 Budget.

The \$20 million shown for the next item, "Interceptor/Fire Control System/Missile," will support redesign and engineering work on the AWG-9 Fire Control System and the AIM-47 Folding Fin Missile, provide funds for the reconfiguration of the YF-12 test aircraft for use as a test bed for these systems, and continue studies on the possible use of the F-111 or F-12 airframes as a basis for the next generation of interceptor aircraft. (The fire control system and missile system work would be applicable to either.)

The next item, "F-4 Improvements," reflects the cost of developing the internal 20mm nose gun for the F-4E. This gun is currently undergoing testing and no additional funds are requested for FY 1968.

The \$33 million requested for "MARK II Avionics" will substantially complete the funding of this follow-on to the F-111A's current avionics suit. . . . A modified version of the MARK II will be incorporated in the FB-111.

The funds requested for the "Advanced Tactical Fighter (FX)," will support continued concept formulation studies on a new air superiority aircraft for possible introduction into the force in the mid-1970's. . . .

We are requesting funds for "Advanced Ballistic Missile Reentry Systems," which comprises a wide variety of efforts to provide new reentry vehicle technology for our strategic missiles and to improve our defense penetration techniques.

The \$8 million requested for "Nike Targets" will provide launch site sup-

port at Vandenberg AFB for ABM targets launched into the Kwajalein area, and for certain Air Force modification development work on the target vehicles.

The funds requested for the next item, "Advanced ICBM," would, as mentioned in the discussion of our Strategic Forces, permit initiation of contract definition for a new strategic missile system in FY 1968, if that proves to be desirable. . . .

The funds requested for the "Adverse Weather Aerial Delivery System" will further develop components designed to give airlift aircraft the capability to navigate to, and air drop personnel and materiel at, specific locations in bad weather or at night without external ground based assistance. . . .

The remaining engineering development items on the Air Force list have all been discussed in connection with the Department's space-related projects.

Management and Support

Army.

The FY 1968 Budget includes \$90 million for the support of the White Sands Missile Range. Test programs are conducted at this range for all the Services and NASA. Among the specific projects are the Air Force's Advanced Ballistic Reentry System (ABRES), the Navy's new Anti-Radiation Missile (based on the Standard SAM Missile), the Army's Lance, as well as NASA's Aerobee project. A major effort at this facility is the range instrumentation program, now in its third year, which will refine the data collected on the range, improve the data reduction capa-

bility, and augment the range communication system.

We are also requesting \$44 million for the Kwajalein Test Site, operated by the Army. . . .

The \$229 million requested for General Support covers the costs of all Army research and development installations and activities other than White Sands and Kwajalein. . . .

Navy.

The Pacific Missile Range, for which \$68 million is requested in FY 1968, is responsible for range scheduling, communications, weather and meteorological services, and data reduction in support of assigned missile and space launch operations in the Pacific. . . .

The Atlantic Undersea Test Evaluation Center (AUTEC), located in a deep-sea canyon off the Bahamas, will consist of three separate test ranges for weapons, sonars and acoustic systems. The weapons range became operational October 1966; the acoustic and sonar ranges are scheduled for completion during FY 1967 and FY 1970 respectively. For AUTEC, \$18 million is requested in FY 1968.

General Support for other Navy research and development laboratories and test facilities not chargeable to specific programs will require \$310 million in FY 1968.

Air Force.

For the Eastern Test Range, \$219 million is requested in FY 1968, approximately \$13 million less than for the current fiscal year. . . . Future test activities will involve greater accuracies, larger payloads, and more complex reentry vehicles as well as more sophisticated missions. To meet these more demanding requirements, the funds included in the FY 1968 request will provide a capability for collecting improved trajectory evalua-

tion data on new frequencies. The program will also provide for the operation of eight specially instrumented C-135 aircraft to support the activities associated with the Apollo programs.

About \$89 million is requested for FY 1968 to support the Air Force Western Test Range which consists of a complex of range-instrumentation networks supporting Air Force, Navy and NASA launches from Vandenberg AFB, Point Arguello and Point Mugu. The program also provides for the operation of five Apollo support ships.

General Support, including "Development Support," will require \$657 million in FY 1968. This item carries the major support of the Air Force Systems Command and its nation-wide complex of research, development and test installations, the construction of additional research and development facilities, and other support programs. It includes about \$85 million for the cost of services provided under contract by organizations such as RAND, Aerospace Corporation, and the Lincoln Laboratory.

Emergency Fund

For the Department of Defense Emergency Fund, we are requesting the appropriation of \$125 million and transfer authority of \$150 million, the same as the amounts provided for FY 1967.

Financial Summary

The Research and Development Program, including the development of systems approved for deployment, will require about \$8.0 billion in New Obligational Authority for FY 1968. A comparison with prior years is shown below:

	(Billions of Dollars)						
	1962 Act.	1963 Act.	1964 Act.	1965 Act.	1966 Act.	1967 Est.	1968 Proposed
R&D—except systems approved for deployment	4.4	5.2	5.4	5.1	5.3	5.4	5.8
R&D—systems approved for deployment	2.5	2.5	2.3	1.9	2.2	2.3	2.4
Total R&D	6.9	7.7	7.7	7.0	7.5	7.7	8.2
Less: Support from other appropriations	— .6	— .6	— .6	— .5	— .6	— .5	— .7
Total RDT&E (TOA)	6.3	7.1	7.1	6.5	6.9	7.2	7.5
Less: Financing Adjustment	— .9	— .1	— .1	—	— .2	—	— .2
Total RDT&E (NOA)	5.4	7.0	7.0	6.5	6.7	7.2	7.3

Other Major Programs

In last year's reorganization of the Five-Year Defense Program structure, we established four new major programs which, for purposes of this presentation, have been grouped together in this section.

Specialized Activities

Specialized Activities comprise those elements of the Defense Program which are directly related to the missions of the combat forces in the Strategic, General Purpose and Airlift/Sealift Forces Programs, but which for purposes of management are more logically handled within the context of homogeneous functional groupings of similar or complementary activities.

National Military Command System.

The National Military Command System (NMCS) is the primary subsystem of the World-wide Military Command and Control System. . . .

The NMCS comprises the National Military Command Center (NMCC) at the Pentagon, the Alternate National Military Command Center (ANMCC), the National Emergency Command Post Afloat (NECPA), the National Emergency Airborne Command Post (NEACP), and the various communications networks linking these command facilities, the unified and specified commands and Service headquarters.

As part of our continuing effort to improve the NMCS, we have expanded the automatic data processing capability at the NMCC to handle the increased workload related to Southeast Asia operations and to provide support for the newly created Strategic Mobility staff in the Office of the Joint Chiefs of Staff. The FY 1968 Budget request provides funds for the further improvement of the data processing system, the information displays, and the related facilities and equipment. . . .

Communications.

The communications category includes both the Defense Communications System (DCS) and certain non-DCS communications operated by the Military departments. . . .

Other Specialized Activities.

The Specialized Activities program also includes the overseas administration and grant aid portions of the Military Assistance Program, and such other mission-related activities as weather service, oceanography, aerospace rescue and recovery, etc.

Because the Military Assistance Program is not included in the legislation being considered at this time, only the last category of activities will be discussed here.

Weather Service. The Air Force and Naval Weather Services collect, analyze, predict and disseminate, globally, meteorological and geophysical information for the support of military operations, NASA's space program (including manned space vehicle reentries and recoveries), research and development missile test firings, and they conduct hurricane and typhoon tracking and forecasting, and collect nuclear debris air samples for the AEC in connection with the test ban treaty safeguards. . . .

Oceanography. This category comprises the activities of the Navy's Oceanographic Office, Defense support of the National Oceanographic Data Center and their related research aircraft and survey ships. . . . During the coming fiscal year, the Navy will significantly expand its oceanographic effort. For example, in the "broad ocean survey" program the range of data collected will be greatly increased.

At the end of FY 1966, nine oceanographic research and survey ships (three manned by Navy crews and six operated by MSTs) and two environmental prediction research aircraft were employed in the program. Seven of these are converted World War II ships but the other two are new oceanographic survey ships (AGS's) which entered the force during FY 1966. In FY 1967 two more new ships—oceanographic research vessels (AGOR's)—will be commissioned, increasing the force to 11 ships and making possible an expansion of the program. The AGS funded in FY 1967 should enter service in FY 1969. No new ships are being requested in FY 1968 for this "operational" program, although two oceanographic research ships are included in the budget for the Research and Development program with which this survey effort is closely integrated.

Air Rescue and Recovery. The air rescue and recovery program comprises the Air Force Aerospace Rescue and Recovery Service (ARRS), certain specialized forces of the Navy, and certain assigned forces of the Army and Marine Corps. . . .

. . . To provide increased air crew recovery capability in Southeast Asia, additional ARRS helicopters will be procured in FY 1967 and FY 1968.

Traffic Control, Approach and Landing System. The Traffic Control, Approach and Landing System (TRACALS) element encompasses those "common system" air traffic control facilities not provided by the Federal Aviation Agency. . . .

There are two prominent current programs. The first, the AIMS Program, is concerned with the addition of the Air Traffic Control Radar Beacon System, which provides positive identification and location of aircraft to all air traffic control radar facilities. The second is concerned with the replacement of current VHF and UHF air-ground-air communications systems in order to meet the more stringent requirement of 50 kilocycle spacing between channels in accordance with our agreements with other members of the International Civil Aviation Organization.

Nuclear Weapons Operations. This element covers the activities of the Defense Atomic Support Agency (DASA) which provides specialized staff assistance to the Secretary of Defense and the Joint Chiefs of Staff; operational, logistical and training support for the Military Services; liaison with the Atomic Energy Commission on weapons development and the planning and conduct of weapons effects tests; and management for the national atomic weapons stockpile. The nuclear weapons effects tests, themselves, as well as nuclear weapons research, are included in the Research and Development program and were discussed earlier. DASA's construction program for FY 1968 includes further shoreline protection work at Johnston Island.

Logistic Support

Logistic support comprises a wide variety of activities which cannot be readily allocated to other major programs or program elements. Included under this heading are the costs of moving passengers and carriers, the Military Sea Transportation Service, the Military Airlift Command and contract airlift; purchasing, storing and inspecting materiel; those parts of the industrial preparedness program (e.g., the provision of new industrial facilities and the maintenance of reserve facilities and equipment) not identified with elements of other major programs; and the major overhaul and rebuild activities for items which are returned to a common stock and cannot, therefore, be related directly to specific military forces or weapon systems.

Personnel Support

The Personnel Support Program comprises the training, medical and other activities associated with personnel, except for those portions of such activities which are integral elements of another program. . . .

Training.

The Defense Department's training establishment constitutes a vast and varied system, including at least 83 major military installations, designed to meet not only peacetime needs for militarily trained manpower, but also to provide the potential for rapidly expanding this force in periods of mobilization. Our total capital investment in these facilities exceeds \$4.8 billion and annual operating costs run over \$1.5 billion. On the average, nearly one-fifth of the active force is assigned to these centers at all times, either as part of the permanent training staff or as trainees. The rising cost of training in the FY 1966-68 period directly reflects the rapid buildup in the size of the military establishment.

Recruit Training. Recruit training (i.e., "basic" or "boot camp" training) is given every new enlisted serviceman to facilitate the transition from civilian life, to inculcate necessary standards of conduct and discipline, to provide initial weapons training, to ensure adequate physical conditioning and to foster motivation and Service *esprit*. In total, recruit training loads are expected to decline slightly in FY 1968, following the rapid rise in FY 1966-67. We now estimate that about 920,000 men will enter basic training next year compared to about 995,000 now estimated for FY 1967. . . .

The FY 1968 request includes funds for two major expansions of basic training facilities. The Air Force plans to add 5,400 additional barracks spaces at its Lackland Military Training Center in Texas and about \$17 million will be needed for this purpose in FY 1968. Construction of a third Navy Recruit Training Center on the site of the former Orlando AFB in Florida (which was previously transferred to the Navy for use as a training devices center in 1964) was initially funded in the FY 1967 Budget and \$21 million more is requested in FY 1968. . . .

Technical Training. The Military Services train enlisted personnel for

about 1,500 separately identifiable occupational specialties. . . .

Professional Training. Professional training encompasses primarily postgraduate level education in military and civilian schools, including medical training.

Among the military schools are the several Service command and staff colleges, the Service war colleges and the joint Service colleges. Each year, over 4,000 students, including foreign military officers and U. S. Government civilians, are educated at these institutions. . . .

Flight Training. Flight training is the most expensive type of instruction given by the Defense Department, in large part because of the very heavy investments required in trainer aircraft and facilities. Three factors have now combined to compound our flight training problem: the large numbers of World War II-trained pilots who are now coming to the close of their flying careers; the rotation requirements of the Vietnam conflict; and the rapidly increasing size of the Army's aviation program. To meet these increased pilot requirements, the FY 1968 Budget includes funds to increase the number of pilots being trained by the Services to an annual rate of approximately 13,500. Actual pilot production will not reach the higher authorized levels in FY 1968, however, since it takes up to 18 months to train a pilot. . . .

In the Air Force, the planned annual output of pilots has been increased to 3,492 compared with 2,956 in FY 1967 (including jet pilots trained for the Military Assistance Program). To help handle this increased training load, a ninth undergraduate pilot training operation will be opened at Randolph AFB.

The new planned Navy annual pilot production rate is about 2,525 pilots (including 100 for the Military Assistance Program and U. S. Coast Guard), compared with about 2,200 previously in FY 1967. Of the 2,425 earmarked for the Navy and Marine Corps, about 945 will be trained for jet aircraft, 830 for propeller aircraft and 650 for helicopters.

The Army's planned pilot production has been increased to 7,500 pilots per year (including 180 for the Military Assistance Program), compared with about 3,700 in the original FY 1967 Budget. About 90 percent of the new Army pilots will be trained for helicopters, up from about 50 percent in FY 1966. The Army will commis-

sion about 75 percent of its new pilots as warrant officers since their positions do not involve command responsibilities. To help handle the larger training loads in FY 1968, Hunter AFB in Georgia (which was scheduled to close in July 1967) has been assigned to the Army and the present flight training program at Fort Wolters will be expanded.

To support the larger flight training programs, the revised FY 1967 Budget and FY 1968 Budget requests provide 582 trainer aircraft for the Army, 269 for the Navy, and 458 for the Air Force.

Service Academies. As you know, we have been increasing the level of enrollment at the Military Academy over the past few years toward an ultimate goal of over 4,000. In FY 1968, enrollment will average about 3,300 cadets. To help accommodate the larger student body, the FY 1968 Budget includes funds for a new 66-classroom academic building at West Point and for personnel facilities and utilities.

Enrollment at the Naval Academy (currently the largest of the three Service academies) in FY 1968 will remain constant at about 4,100. Construction funds, totaling \$3 million, are requested for the modernization of an academic building at Annapolis, and for additional personnel facilities.

The Air Force Academy, which has also been gradually building up the size of its student body to an ultimate level of 4,000, will reach a total of 3,100 cadets in FY 1968. In addition, a Cadet Pilot Indoctrination Program, designed to encourage all physically qualified cadets to consider flight training upon graduation, will be instituted. . . . About \$5 million is included in the FY 1968 Budget for construction of medical, training and other facilities at the Air Force Academy in FY 1968.

Medical Services.

Medical Services include those costs for medical and dental services not directly associated with military units in our other major programs, the costs of medical care for military dependents at non-military facilities, the costs of providing veterinary services, and the cost of operating various health service activities such as the Armed Forces Institute of Pathology. . . .

The FY 1968 construction program for medical facilities totals \$161 million—the largest ever. It includes 27 new hospitals or additions to existing hospitals, together with a large number of other medical facilities.

* * * * *

(Millions of Dollars)

OASD (Comptroller) January 24, 1967

(Millions of Dollars)

OASD (Comptroller) January 24, 1967

TABLE 3

Department of Defense
FINANCIAL SUMMARY
(Billions of Dollars)

	1961	1962 Orig- inal	1962 Final	1963	1964	1965	1966	1967			1968
								Enacted or auth. ^a	SEA Suppl.	Total	
Strategic Forces -----	---	---	11.2	10.5	9.3	7.1	6.8	6.7	.4	7.1	8.1
General Purpose Forces -----	---	---	18.0	17.9	18.0	19.1	29.5	26.8	7.5	34.3	34.4
Specialized Activities -----	---	---	3.0	3.7	3.9	4.2	4.7	4.7	.2	4.9	5.3
Airlift and Sealift Forces -----	---	---	1.1	1.1	1.2	1.4	1.7	1.1	.4	1.5	1.6
Reserve and Guard Forces -----	---	---	1.8	1.7	1.9	2.0	2.3	2.4	.2	2.6	2.8
Research and Development -----	---	---	4.4	5.2	5.4	5.1	5.3	5.3	.1	5.4	5.8
Logistics -----	---	---	3.8	3.7	3.8	4.0	5.3	5.0	1.3	6.3	6.0
Personnel Support -----	---	---	4.8	5.0	5.3	5.7	7.2	7.1	1.1	8.2	8.9
Administration -----	---	---	1.2	1.3	1.3	1.5	2.6	2.3	.7	3.0	3.1
Military Assistance Program -----	---	---	1.8	1.6	1.2	1.3	1.2	.9	---	.9	.6
Gross Total Oblig. Authority -----	---	---	51.1	51.7	51.5	51.4	66.6	62.4	11.8	74.2	76.6
Less Unfunded Retirement Pay -----	---	---	-.5	-.3	-.3	-.2	-.1	-.2	-.1	-.3	-.2
Net Total Oblig. Authority -----	46.1	44.9	50.6	51.3	51.2	51.2	66.5	62.2	11.7	74.0	76.4
Working Capital -----	-.4	-.2	-.4	-.4	-.3	-.2	---	---	.5	.5	.2
Other Financing Adjustments -----	-2.6	-1.0	-.8	.2	---	-.5	-2.9	-1.7	---	-1.7	-1.4
New Obligational Authority -----	43.1	43.7	49.4	51.1	50.9	50.5	63.5	60.5	12.3	72.8	75.3
Total Expenditures -----	44.7	44.7	48.2	50.0	51.2	47.4	55.4	58.9	9.1	68.0	73.1
Expenditures as % of GNP -----	8.8	---	8.9	8.7	8.4	7.3	7.8	---	---	8.9	9.0
TOA by Department and Agency											
Army -----	---	---	12.9	12.2	12.8	12.7	19.1	18.5	5.1	23.6	24.7
Civil Defense -----	---	---	.3	.1	.1	.1	.1	.1	---	.1	.1
Navy -----	---	---	15.1	15.1	14.9	15.3	20.0	18.5	3.5	22.0	22.4
Air Force -----	---	---	20.2	21.0	20.6	20.1	24.3	22.5	3.0	25.5	26.0
Defense Agencies -----	---	---	.3	.9	1.1	1.1	1.3	1.4	.1	1.5	2.0
Defense Family Housing ^b -----	---	---	.5	.6	.7	.7	.7	.5	---	.5	.8
Military Assistance Program -----	---	---	1.8	1.6	1.2	1.3	1.2	.9	---	.9	.6
Gross Total Oblig. Authority ^c -----	---	---	51.1	51.7	51.5	51.4	66.6	62.4	11.8	74.2	76.6
Memo: Increase in pay included above:											
Military -----	---	---	---	.1	1.1	1.6	2.4	3.4	---	3.4	3.6
Civilian -----	---	---	---	.2	.3	.6	.7	1.0	---	1.0	1.1
Increased Payments to Retired Personnel -----	---	---	.1	.2	.4	.6	.8	1.0	---	1.0	1.2
Total -----	---	---	.1	.5	1.8	2.8	4.0	5.4	---	5.4	5.9
Memo: Unfunded Military Retirement											
Past Service Liability -----	45.1	47.3	47.3	48.9	56.1	59.5	66.6	71.4	---	71.4	74.1

^a Included is supplemental appropriation request for military and civilian pay increases authorized by P.L. 89-501 and P.L. 89-504; Medicare authorized by P.L. 89-614; and Homeowners Assistance program authorized by P.L. 89-754.

^b In 1961 and 1962, funds for this activity were appropriated to the military departments.

^c Excludes cost of nuclear warheads.

OASD (Comptroller)
January 24, 1967

DIRECT BUDGET PLAN (TOA), NEW OBLIGATIONAL AUTHORITY, AND EXPENDITURES

Fiscal Years 1966-1968

(Millions of Dollars)

Functional classification	Direct Budget Plan (TOA)			New Obligational Authority			Expenditures		
	FY 1966	FY 1967	FY 1968	FY 1966	FY 1967	FY 1968	FY 1966	FY 1967	FY 1968
Military Personnel									
Active Forces	14,652	17,636	*19,055	14,655	17,636	*19,055	14,407	17,465	*18,903
Reserve Forces	803	985	950	818	985	950	755	935	910
Retired Pay	1,592	1,814	2,020	1,600	1,814	2,020	1,591	1,800	2,010
Total	17,047	20,435	*22,025	17,073	20,435	*22,025	16,753	20,200	*21,823
Operation and Maintenance	15,378	19,274	*19,154	15,339	19,274	*19,154	14,710	18,600	*19,017
Subtotal—Operating	32,426	39,709	41,179	32,412	39,709	41,179	31,463	38,800	40,840
Procurement	22,595	24,386	24,013	20,013	22,886	22,917	14,339	18,465	21,632
Res., Devel., Test, & Evaluation	6,946	7,177	7,523	6,746	7,181	7,273	6,259	6,700	7,200
Military Construction	2,545	1,158	2,144	2,566	1,097	2,123	1,334	1,600	1,600
Family Housing	682	530	823	666	518	814	647	570	582
Civil Defense	105	102	111	107	101	111	86	97	100
Special Foreign Currency Program	---	7	16	---	7	16	---	2	9
Revolving and Management Funds	---	---	---	---	535	241	281	716	337
Total—Military Functions	65,299	73,609	75,808	62,510	72,034	74,674	54,409	66,950	72,300
Military Assistance	1,163	888	621	1,023	782	596	968	1,000	800
Total—Mil. Functions & Mil. Ass't	66,462	73,956	76,429	63,533	72,816	*75,270	55,377	67,950	73,100
Department or Agency									
Department of the Army	18,548	22,920	23,918	17,492	22,989	23,629	14,832	21,108	23,372
Department of the Navy	19,462	21,365	21,690	18,486	20,709	21,134	16,026	18,978	20,429
Department of the Air Force	23,593	24,803	25,281	22,655	24,263	24,891	20,131	22,594	24,077
Defense Agencies/OSD	3,590	3,879	4,767	3,770	3,972	4,867	3,335	4,174	4,282
Civil Defense	105	102	111	107	101	111	86	97	100
Total—Military Functions	65,299	73,069	*75,808	62,510	72,034	*74,674	54,409	66,950	*72,300
Military Assistance	1,163	888	621	1,023	782	596	968	1,000	800
Total—Mil. Functions & Mil. Ass't	66,462	73,956	76,429	63,533	72,816	75,270	55,377	67,950	73,100

a FY 1968 includes amounts proposed for separate transmittal under proposed legislation not distributed by Military department, as follows:

	TOA	NOA	Exps.
Military personnel	\$24 Million	\$24 Million	\$23 Million
Operation & Maintenance	18 Million	18 Million	17 Million
	\$42 Million	\$42 Million	\$40 Million

NOTE: FY 1967 NOA includes amounts proposed for separate transmittal: \$12,275,870,000 for Southeast Asia Support; \$340,130,000 for Military pay increase; \$179,000,000 for civilian pay increase; \$71,000,000 for Medicare benefits; and \$11,000,000 for Homeowners Assistance.

OASD (Comptroller)
January 24, 1967

Department of Defense
DIRECT BUDGET PLAN (TOA), NEW OBLIGATIONAL AUTHORITY, AND EXPENDITURES
Fiscal Year 1966-1968 By Functional Title and Service
(Millions of Dollars)

Functional Classification	Department of Defense—Total			Department of the Army			Department of the Navy			Department of the Air Force			Defense Agencies/ OSD/Civil Def.	
	FY 1966	FY 1967	FY 1968	FY 1966	FY 1967	FY 1968	FY 1966	FY 1967	FY 1968	FY 1966	FY 1967	FY 1968	FY 1966	FY 1967
	Supple- mental	total		Supple- mental	total		Supple- mental	total		Supple- mental	total		Supple- mental	total
<i>Total obligatory authority (TOA)</i>														
Military Personnel														
Active Forces	14,652	1,620	17,636	5,149	729	6,898	7,870	4,565	381	5,212	5,467	4,939	510	5,526
Reserve Forces	803	50	955	521	45	680	642	145	2	151	154	137	3	155
Retired Pay	1,592	34	1,814	2,020									1,592	34
														1,814
Total	17,047	1,704	20,435	5,670	774	7,577	8,512	4,710	383	5,363	5,621	5,075	513	5,681
Operation and Maintenance	15,378	3,562	19,274	5,098	2,061	7,448	7,344	4,268	790	5,071	5,401	5,259	595	5,790
Subtotal—Operating	32,426	5,266	39,709	41,179	10,768	2,835	15,025	15,857	8,979	11,173	10,434	10,722	10,334	11,109
Procurement														
Aircraft	10,007	3,539	10,350	9,111	1,287	533	1,202	769	3,202	1,703	3,463	2,560	5,518	1,303
Missiles	2,020	102	2,199	2,786	364	6	560	769	408	51	354	649	1,248	45
Ships	1,876	2,041	1,946						1,876		2,041	1,946		
Tracked Combat Vehicles	445	66	527	430	421	62	509	425	23	4	18	5		
Ordnance, Vehicles, & Rel. Equip.	5,012	1,547	5,521	6,436	2,041	759	2,095	2,836	1,544	328	1,563	1,871	1,426	460
Electronics & Communications	1,473	403	1,502	1,444	507	303	617	550	473	57	519	560	487	44
Other Procurement	1,762	648	2,244	1,860	570	467	880	533	716	149	780	780	446	33
														511
Total	22,595	6,306	24,386	24,013	5,190	2,130	5,863	5,881	8,242	2,292	8,738	8,371	9,125	1,884
Res., Devel., Test, & Evaluation														
Military Sciences	601		616	615	160		161	165	181		189	192	157	103
Aircraft	1,256	26	1,171	1,145	101	4	114	116	292	12	335	280	845	10
Missiles	1,997	15	2,414	2,499	699		722	706	417	15	715	785	759	862
Astronautics	1,075		954	1,119	23		14	11	23		18	16	1,025	918
Ships	325	3	299	299	1		1	324	3		285	298		
Ordnance, Vehicles, & Rel. Equip.	386		354	313	202		196	184	184		158	130		
Other Equipment	901	91	968	988	262	36	307	309	83	10	110	137	314	23
Programwide Management & Support	405		395	421	75		78	79	79		98	102	241	208
Emergency Fund			18	125										
Total	6,946	135	7,177	7,523	1,523	40	1,593	1,571	1,582	40	1,908	1,940	3,339	33
Military Construction														
Active Forces	2,519	624	1,131	2,107	1,066	288	430	592	650	140	279	651	779	196
Reserve Forces	26		26	37			8	17	10		5	5	17	13
														15
Total	2,545	624	1,158	2,144	1,066	288	438	609	659	140	285	656	796	196
Family Housing														
Civil Defense	682	11	530	823										
Special Foreign Currency Program	105		102	111										
Total—Military Functions	65,299	12,342	73,069	75,808	18,548	5,293	22,920	23,918	19,462	3,645	21,365	21,690	23,593	3,222
Military Assistance	1,163		888	621										
Total—TOA	66,462	12,342	73,956	76,429	18,548	5,293	22,920	23,918	19,462	3,645	21,365	21,690	24,803	25,281
Less financing adjustments	-2,929		-1,676	-1,400	-1,056		-282	-349	-976		-733	-559	-939	
Plus NOA for Revolving Funds			535	241		351	351	60		77	4		-540	-434
New Obligational Authority	63,533	12,877	72,816	75,270	17,492	5,644	22,989	23,629	18,486	3,722	20,709	21,134	22,655	3,222
Expenditures	55,377	9,650	67,950	73,100	14,832	4,589	21,108	23,372	16,026	1,923	18,978	20,429	20,131	2,785
														22,594
														24,077
														3,421
														4,382

NOTE: FY 1967 TOA includes amounts proposed for separate transmittal: \$11,740,870,000 for Southeast Asia Support; \$340,130,000 for Military pay increase; \$179,000,000 for civilian pay increase; \$71,000,000 for Medicare benefits; and \$11,000,000 for Homeowners Assistance.

* FY 1968 TOA includes amounts proposed for separate transmittal under proposed legislation not distributed by Military department, as follows:

Military Personnel \$24 Million
Operation & Maintenance \$18 Million

OASD (Comptroller)
January 24, 1967

ESTIMATED OBLIGATIONS AND AMOUNTS AVAILABLE FOR OBLIGATION

General Fund Appropriations—FY 1966-1968

(Millions of Dollars)

Item	New obligational authority	Reimburse- ment	Total available for obligation	Obliga- tions	Unobligated balance carried forward	Unobligated balance as % of available
<i>Fiscal Year 1966—Actual</i>						
Department of the Army	17,492	3,211	23,174	21,000	2,156	9.3
Department of the Navy	18,486	1,750	25,381	18,714	6,666	26.2
Department of the Air Force	22,655	1,520	27,432	23,009	4,421	16.1
Defense Agencies/OSD	3,770	67	4,114	3,513	573	13.9
Civil Defense	107	---	130	90	39	30.0
Total—Military Functions	62,510	6,548	80,230	66,325	13,854	17.2
Military Assistance	1,023	6	906	895	11	1.2
Total—Mil. Functions & Mil. Assist.	63,533	6,555	81,136	67,220	13,865	17.0
<i>Fiscal Year 1967—Estimated</i>						
Department of the Army	22,638	3,339	28,240	25,901	2,339	8.2
Department of the Navy	20,632	1,584	28,903	23,615	5,288	18.2
Department of the Air Force	24,263	1,527	30,282	25,788	4,494	14.8
Defense Agencies/OSD	3,865	77	4,315	3,994	320	7.4
Civil Defense	101	---	142	130	12	8.4
Total—Military Functions	71,499	6,527	91,881	79,427	12,454	13.5
Military Assistance	728	10	743	733	10	1.3
Total—Mil. Functions & Mil. Assist.	72,227	6,537	92,624	80,160	12,464	13.4
<i>Fiscal Year 1968—Estimated</i>						
Department of the Army	23,569	3,246	29,154	26,944	2,210	7.5
Department of the Navy	21,130	1,576	27,995	22,516	5,479	19.5
Department of the Air Force	24,847	1,000	30,341	26,080	4,262	14.0
Defense Agencies/OSD	4,734	77	5,132	4,561	571	11.1
Civil Defense	111	---	123	118	5	4.0
Proposed legislation	42	---	42	42	---	---
Total—Military Functions	74,433	5,900	92,787	80,261	12,526	13.4
Military Assistance	536	10	556	546	10	1.7
Total—Mil. Functions & Mil. Assist.	74,969	5,910	93,343	80,807	12,536	13.4

Notes: (1) The total available for obligation is the sum of (a) unobligated balances from the prior year (b) new obligational authority, (c) reimbursements and (d) transfers between appropriations.

(2) In addition to obligations, the unobligated balance carried forward was reduced by \$51 million of expired obligating authority withdrawn.

OASD (Comptroller)
January 24, 1967

TABLE 7

Department of Defense

ESTIMATED EXPENDITURES AND AMOUNTS AVAILABLE FOR EXPENDITURES

Fiscal Years 1966-1968

(Millions of Dollars)

Item	New obliga- tional authority	Total available for expendi- ture	Expendi- tures	Unexpended balance carried forward	Unexpended balance as % of available
<i>Fiscal Year 1966—Actual</i>					
Department of the Army -----	17,492	23,781	14,832	8,941	37.5
Department of the Navy -----	18,486	34,128	16,026	18,074	52.9
Department of the Air Force -----	22,655	32,419	20,131	12,316	37.9
Defense Agencies/OSD -----	3,770	5,134	3,335	1,760	34.2
Civil Defense -----	107	211	86	119	56.3
Total—Military Functions -----	62,510	95,673	54,409	41,210	43.0
Military Assistance -----	1,023	2,799	968	1,831	65.4
Total—Mil. Functions & Mil. Assist. -----	63,533	98,472	55,377	43,041	43.7
<i>Fiscal Years 1967—Estimated</i>					
Department of the Army -----	22,989	32,037	21,108	10,930	34.1
Department of the Navy -----	20,709	38,884	18,978	19,907	51.1
Department of the Air Force -----	24,263	36,571	22,594	13,977	38.2
Defense Agencies/OSD -----	3,972	5,532	4,174	1,358	24.5
Civil Defense -----	101	220	97	123	55.9
Total—Military Functions -----	72,034	113,244	66,950	46,294	40.8
Military Assistance -----	782	2,613	1,000	1,613	61.7
Total—Mil. Functions & Mil. Assist. -----	72,816	115,856	67,950	47,906	41.3
<i>Fiscal Year 1968—Estimated</i>					
Department of the Army -----	23,629	34,558	23,372	11,186	32.3
Department of the Navy -----	21,134	41,047	20,429	20,618	50.2
Department of the Air Force -----	24,891	38,862	24,077	14,785	38.0
Defense Agencies/OSD -----	4,867	6,225	4,282	1,943	31.2
Civil Defense -----	111	234	100	134	57.2
Proposed legislation -----	42	42	40	2	4.7
Total—Military Functions -----	74,674	120,968	72,300	48,668	40.2
Military Assistance -----	596	2,209	800	1,409	63.7
Total—Mil. Functions & Mil. Assist. -----	75,270	123,176	73,100	50,076	40.6

Notes: (1) The total available for expenditure is the sum of (a) unexpended balances from the prior year, (b) new obligational authority and (c) transfers between appropriations. Transfers, which total \$173 million in FY 1966; \$200 million in FY 1967; and \$6 million in FY 1968 are not shown in detail.

(2) In addition to expenditures, the unexpended balance carried forward was reduced in FY 1966 by \$54 million of balances withdrawn.

OASD (Comptroller)
January 24, 1967

TABLE 8

Department of Defense
ORDER OF MAGNITUDE DATA ON COMPARATIVE NEW OBLIGATIONAL AUTHORITY BY FUNCTIONAL TITLE
FY 1954-1968
(Millions of Dollars)

<i>Functional classification</i>	FY 1954	FY 1955	FY 1956	FY 1957	FY 1958	FY 1959	FY 1960	FY 1961	FY 1962	FY 1963	FY 1964	FY 1965	FY 1966	FY 1967	FY 1968
<i>Military Personnel</i>															
Active Forces	11,266	10,650	10,526	10,411	10,398	10,709	10,637	10,695	11,545	11,431	12,273	12,699	14,655	17,636	19,055
Reserve Forces	315	369	512	613	607	644	674	660	633	672	703	751	818	985	950
Retired Pay	387	424	495	515	567	640	715	790	920	1,026	1,228	1,399	1,600	1,814	2,020
Total	11,968	11,442	11,534	11,539	11,572	11,933	12,026	12,144	13,098	13,129	14,204	14,849	17,073	20,435	22,025
Operation and Maintenance	9,462	8,276	8,768	9,734	10,221	10,187	10,317	10,702	11,759	11,496	11,705	12,603	15,339	19,274	19,154
Subtotal—Operating	21,430	19,718	20,302	21,273	21,793	22,180	22,343	22,846	24,857	24,625	25,909	27,452	32,412	39,709	41,179
<i>Procurement</i>															
Aircraft	5,041	4,922	6,923	6,559	5,945	6,167	5,929	4,998	5,646	5,882	5,640	5,962	9,354	9,529	8,721
Missiles	569	234	764	2,135	2,090	3,966	2,030	2,078	3,230	3,969	3,676	2,615	1,642	2,187	2,711
Ships	759	1,150	1,274	1,335	1,723	1,943	1,140	2,246	2,967	2,939	2,060	1,905	1,522	1,757	1,824
Tracked Combat Vehicles	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	435	429	430
Ordnance, Vehicles, and Related Equipment	2,990	527	405	247	90	545	703	1,034	1,830	1,959	2,028	1,431	4,252	5,154	5,809
Electronics and Communications	395	327	215	469	549	982	1,179	935	1,375	1,176	1,353	1,039	1,240	1,417	1,368
Other Procurement	835	260	214	549	586	701	702	425	697	742	889	672	1,568	2,413	2,055
Total	10,588	7,420	9,795	11,294	10,983	14,304	11,701	11,716	15,746	16,667	15,645	13,836	20,013	22,886	22,917
Research, Development, Test, and Evaluation	2,165	1,708	1,828	2,185	2,345	3,777	5,620	6,033	6,402	6,993	6,984	6,483	6,746	7,181	7,273
Military Construction	308	882	2,012	1,915	2,085	1,385	1,364	1,061	972	1,204	949	1,049	2,566	1,097	2,123
Family Housing	---	---	---	---	---	---	---	---	---	590	644	631	666	518	814
Civil Defense	---	---	---	---	---	---	---	---	257	126	112	105	107	101	111
Special Foreign Currency Program	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Revolving and Management Funds	100	1,119	---	75	130	57	30	30	(b)	(b)	---	---	(b)	535	241
Subtotal—Military Functions—New Obligational	34,590	30,847	33,937	36,742	37,337	41,703	41,058	41,686	48,234	50,204	50,243	49,557	62,510	72,034	74,674
Avail. Transfers from prior year balances	---	-60	-750	-487	-590	-535	-430	-366	-388	-410	-321	-193	---	---	---
Total—Military Functions—New Obligational Authority	34,590	30,787	33,187	36,255	36,747	41,168	40,628	41,321	47,846	49,794	49,922	49,363	62,510	72,034	74,674
Military Assistance	3,192	1,204	1,016	2,018	1,340	1,515	1,331	1,785	1,577	1,325	1,000	1,130	1,023	782	596
Total—Military Functions & Military Assistance	37,783	31,991	34,203	38,273	38,087	42,683	41,959	43,106	49,423	51,119	50,922	50,493	63,533	72,816	75,270
<i>Department or Agency</i>															
Department of the Army	12,777	7,764	7,354	7,672	7,731	9,381	9,689	9,914	12,141	11,631	12,513	12,003	17,492	22,989	23,629
Department of the Navy	9,612	10,221	9,648	10,220	10,506	11,820	11,270	12,431	14,757	15,286	14,899	14,845	18,486	20,709	21,134
Department of the Air Force	11,411	12,137	15,517	17,697	17,732	18,713	18,496	17,884	19,513	20,179	19,446	19,219	22,655	24,263	24,891
Defense Agencies/OSD	791	666	667	666	777	1,255	1,173	1,092	1,178	2,572	2,951	3,192	3,770	3,972	4,867
Civil Defense	---	---	---	---	---	---	---	---	257	126	112	105	107	101	111
Total—Military Functions	34,590	30,787	33,187	36,255	36,747	41,168	40,628	41,321	47,846	49,794	49,922	49,363	62,510	72,034	74,674
Military Assistance	3,192	1,204	1,016	2,018	1,340	1,515	1,331	1,785	1,577	1,325	1,000	1,130	1,023	782	596
Total—Military Functions and Military Assistance	37,783	31,991	34,203	38,273	38,087	42,683	41,959	43,106	49,423	51,119	50,922	50,493	63,533	72,816	75,270

NOTE: Amounts include estimated comparability adjustments not supportable by accounting records.

^a Amount included in entry for "Ordnance, Vehicles, and Related Equipment."^b Excludes authority in Stock Funds (10 U.S.C. 2210(b)) to incur reimbursable obligations in anticipation of reimbursable orders to be received in subsequent years. Such authority is included in the Budget Document presentation as "New Obligational Authority."^c FY 1968 includes amounts proposed for separate transmittal under proposed legislation not disturbed by military department, as follows:

Military Personnel	\$24 Million
Operation & Maintenance	18 Million
Total	\$42 Million

OASD (Comptroller)
January 24, 1967
FAD-396

ORDER OF MAGNITUDE DATA ON COMPARATIVE EXPENDITURES BY FUNCTIONAL TITLE

FY 1954-1968

(Millions of Dollars)

	FY 1954	FY 1955	FY 1956	FY 1957	FY 1958	FY 1959	FY 1960	FY 1961	FY 1962	FY 1963	FY 1964	FY 1965	FY 1966	FY 1967	FY 1968
Functional classification															
Military Personnel															
Active Forces	10,963	10,643	10,665	10,384	10,441	10,545	10,390	10,651	11,530	11,386	12,312	12,662	14,407	17,465	18,903
Reserve Forces	293	341	439	514	608	615	654	648	607	599	674	725	755	935	910
Retired Pay	386	419	477	511	562	641	694	786	894	1,015	1,209	1,384	1,591	1,800	2,010
Total	11,643	11,403	11,582	11,409	11,611	11,801	11,738	12,085	13,032	13,000	14,195	14,771	16,753	20,200	21,823
Operation and Maintenance	9,162	7,931	8,400	9,487	9,761	10,378	10,223	10,611	11,594	11,874	11,932	12,349	14,710	18,600	19,017
Subtotal—Operating	20,805	19,334	19,982	20,896	21,372	22,179	21,961	22,696	24,626	24,874	26,127	27,120	31,463	38,800	40,840
Procurement															
Aircraft	9,080	8,804	7,835	8,647	8,793	7,730	6,272	5,898	6,400	6,309	6,053	5,200	6,635	8,010	9,003
Missiles	417	604	1,005	1,855	2,434	3,337	3,027	2,972	3,442	3,817	3,577	2,096	2,069	1,990	2,211
Ships	905	944	858	842	1,105	1,491	1,744	1,801	1,906	2,522	2,078	1,713	1,479	1,450	1,575
Tracked Combat Vehicles	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	236	202	265	350
Ordnance, Vehicles and Related Equipment	3,334	1,191	1,260	674	365	399	443	675	1,137	1,665	1,597	1,073	1,697	3,935	5,204
Electronics and Communications	700	441	660	704	663	720	1,093	1,042	1,139	1,427	1,264	897	983	1,129	1,159
Other Procurement	1,521	854	608	767	723	730	755	706	507	891	782	625	1,273	1,686	2,129
Total	15,597	12,838	12,227	13,488	14,083	14,409	13,334	13,095	14,532	16,632	15,351	11,839	14,339	18,465	21,632
Research, Development, Test, and Evaluation	2,187	2,261	2,101	2,406	2,504	2,866	4,710	6,131	6,319	6,376	7,021	6,236	6,259	6,700	7,200
Military Construction	1,744	1,715	2,079	1,968	1,753	1,948	1,626	1,605	1,347	1,144	1,026	1,007	1,334	1,600	1,600
Family Housing										427	580	619	647	570	582
Civil Defense	—3	*	*	—1	*	*	*	*	90	203	107	93	86	97	100
Special Foreign Currency Program														2	9
Revolving and Management Funds	—219	—611	—684	—323	—643	—179	—416	—300	—99	—1,401	—452	—741	281	716	337
Adjustment to Budget Basis	—145	—6	86												
Total—Military Functions	40,326	35,531	35,792	38,436	39,070	41,223	41,215	43,227	46,815	48,252	49,760	46,173	54,409	66,950	72,300
Military Assistance	3,629	2,292	2,611	2,352	2,187	2,340	1,609	1,449	1,390	1,721	1,485	1,229	968	1,000	800
Total—Military Functions & Military Assistance	43,955	37,823	38,403	40,788	41,258	43,563	42,824	44,676	48,205	49,973	51,245	47,401	55,377	67,950	73,100
Department or Agency															
Department of the Army	12,910	8,901	8,703	9,063	9,051	9,467	9,392	10,130	11,427	11,499	12,050	11,600	14,832	21,108	23,372
Department of the Navy	11,290	9,732	9,744	10,397	10,913	11,720	11,642	12,214	13,260	14,005	14,520	13,399	16,026	18,978	20,429
Department of the Air Force	15,666	16,405	16,750	18,361	18,437	19,083	19,065	19,785	20,840	20,642	20,509	18,216	20,131	22,594	24,077
Defense Agencies/OSD	464	494	596	615	669	953	1,115	1,098	1,198	1,905	2,574	2,865	3,335	4,174	4,282
Civil Defense	—3	*	*	—1	*	*	*	*	90	203	107	93	86	97	100
Total—Military Functions	40,326	35,531	35,792	38,436	39,070	41,223	41,215	43,227	46,815	48,252	49,760	46,173	54,409	66,950	72,300
Military Assistance	3,629	2,292	2,611	2,352	2,187	2,340	1,609	1,449	1,390	1,721	1,485	1,229	968	1,000	800
Total—Military Functions & Military Assistance	43,955	37,823	38,403	40,788	41,258	43,563	42,824	44,676	48,205	49,973	51,245	47,401	55,377	67,950	73,100
NOTE: Amounts include estimated comparability adjustments not supportable by accounting records.															
* Less than \$5 million.															
a Amount included in entry for "Ordnance, Vehicles, and Related Equipment."															

TABLE 10

Department of Defense
FINANCIAL SUMMARY OF FY 1967 BUDGET
 Appropriations Enacted and Supplementals Proposed
 (Thousands of Dollars)

	Appropriations enacted	Transfers and adjust- ments	Military and civilian pay Supple- mental	"Medicare" and "Homeowners Assistance" Supple- mental	S.E.A. Supple- mental	Total
<i>Military Personnel</i>						
Military Personnel, Army -----	6,164,400	4,164	78,500	-----	650,500	6,897,564
Military Personnel, Navy -----	3,652,100	-4,164	77,700	-----	220,800	3,946,436
Military Personnel, M.C. -----	1,183,200	-----	24,300	-----	58,400	1,265,900
Military Personnel, A.F. -----	5,015,800	-----	106,300	-----	403,700	5,525,800
Reserve Personnel, Army -----	288,211	-----	6,200	-----	14,900	309,311
Reserve Personnel, Navy -----	112,600	-----	800	-----	-----	113,400
Reserve Personnel, M.C. -----	36,500	-----	800	-----	-----	37,300
Reserve Personnel, A.F. -----	69,700	-----	1,100	-----	-----	70,800
Nat'l Guard Personnel, Army -----	346,533	-----	8,520	-----	15,280	370,333
Nat'l Guard Personnel, A.F. -----	82,000	-----	1,910	-----	290	84,200
Retired Pay, Defense -----	1,780,000	-----	34,000	-----	-----	1,814,000
TOTAL—Military Personnel -----	18,731,044	-----	340,130	-----	1,363,870	20,435,044
<i>Operation and Maintenance</i>						
Oper. & Maint., Army -----	5,122,427	33,005	64,000	29,000	1,968,000	7,216,432
Oper. & Maint., Navy -----	3,980,300	-24,806	42,000	25,000	624,000	4,646,494
Oper. & Maint., M.C. -----	325,600	-48	2,300	-----	96,700	424,552
Oper. & Maint., A.F. -----	4,943,100	-1,823	49,000	17,000	528,000	5,535,277
Oper. & Maint., Def. Agcs. -----	806,500	2,517	20,300	-----	85,800	915,117
O&M, Army Nat'l Guard -----	231,000	-----	-----	-----	-----	231,000
O&M, Air Nat'l Guard -----	253,300	-----	1,400	-----	-----	254,700
Nat'l Bd for Prom. R.P., A -----	494	-----	-----	-----	-----	494
Claims, Defense -----	25,000	-----	-----	-----	9,000	34,000
Contingencies, Defense -----	15,000	-----	-----	-----	-----	15,000
Ct of Mil Appeals, Defense -----	600	-----	-----	-----	-----	600
TOTAL—Oper. & Maint. -----	15,703,321	8,844	179,000	71,000	3,311,500	19,273,665
<i>Procurement</i>						
Proc. of Equip. & Msls, Army -----	3,483,300	-----	-----	-----	2,130,000	5,613,300
Proc. of A/C & Msls, Navy -----	1,789,900	-58,000	-----	-----	1,752,000	3,483,900
Shipbldg. & Conv., Navy -----	1,756,700	-----	-----	-----	-----	1,756,700
Other Procurement, Navy -----	1,968,300	-----	-----	-----	287,000	2,255,300
Procurement, M.C. -----	262,900	-----	-----	-----	253,000	515,900
A/C Proc., Air Force -----	4,017,300	-4,000	-----	-----	1,303,000	5,316,300
Missile Proc., Air Force -----	1,189,500	-----	-----	-----	45,000	1,234,500
Other Proc., Air Force -----	2,122,600	-----	-----	-----	536,000	2,658,600
Proc., Defense Agencies -----	51,300	-----	-----	-----	-----	51,300
TOTAL—Procurement -----	16,641,800	-62,000	-----	-----	6,306,000	22,885,800
<i>Res., Dev., Test, & Eval.</i>						
RDT&E, Army -----	1,528,700	27,998	-----	-----	40,000	1,596,698
RDT&E, Navy -----	1,758,600	115,436	-----	-----	40,000	1,914,036
RDT&E, Air Force -----	3,112,600	23,151	-----	-----	33,000	3,168,751
RDT&E, Defense Agencies -----	459,059	1,781	-----	-----	22,000	482,840
Emergency Fund, Defense -----	125,000	-106,805	-----	-----	-----	18,195
TOTAL—RDT&E -----	6,983,959	61,561	-----	-----	135,000	7,180,520
<i>Military Construction</i>						
Military Constr., Army -----	114,014	-----	-----	-----	288,500	402,514
Military Constr., Navy -----	126,918	-----	-----	-----	140,000	266,918
Military Constr., A.F. -----	205,495	-----	-----	-----	196,000	401,495
Military Constr., Def. Agcs. -----	7,547	440	-----	-----	-----	7,986
Military Constr., Army Res. -----	-----	-----	-----	-----	-----	-----
Military Constr., Naval Res. -----	5,400	-----	-----	-----	-----	5,400
Military Constr., A.F. Res. -----	3,600	-----	-----	-----	-----	3,600
Military Constr., Army N.G. -----	-----	-----	-----	-----	-----	-----
Military Constr., Air N.G. -----	9,400	-----	-----	-----	-----	9,400
Loran Stations, Defense -----	-----	-----	-----	-----	-----	-----
TOTAL—Military Constr. -----	472,374	440	-----	-----	624,500	1,097,314

(Continued on page 50)

TABLE 10—Continued

Department of Defense
FINANCIAL SUMMARY OF FY 1967 BUDGET
 Appropriations Enacted and Supplementals Proposed
 (Thousands of Dollars)

	Appropriations enacted	Transfers and adjustments	Military and civilian pay Supplemental	"Medicare" and "Homeowners Assistance" Supplemental	S.E.A. Supplemental	Total
<i>Family Housing</i>						
Family Housing, Defense	507,196	-----	-----	-----	-----	507,196
Homeowners Assistance, Def.	-----	-----	-----	11,000	-----	11,000
<i>Civil Defense</i>						
O&M, Civil Defense	66,100	— 1	-----	-----	-----	66,099
Research, Shelter Survey & Marking, Civil Defense	35,000	-----	-----	-----	-----	35,000
Constr. of Facilities, C. D.	-----	-----	-----	-----	-----	-----
TOTAL—Civil Defense	101,100	— 1	-----	-----	-----	101,099
Special Foreign Currency Prog.	7,348	-----	-----	-----	-----	7,348
<i>Revolving Funds</i>						
Army Stock Fund	-----	-----	-----	-----	351,000	351,000
Navy Stock Fund	-----	-----	-----	-----	77,000	77,000
Defense Stock Fund	-----	-----	-----	-----	107,000	107,000
TOTAL—Revolving Funds	-----	-----	-----	-----	535,000	535,000
MILITARY FUNCTIONS—TOTALS						
Department of the Army	17,279,079	65,167	157,220	29,000	5,458,180	22,988,646
Department of the Navy	16,959,018	28,418	147,900	25,000	3,548,900	20,709,236
Department of the Air Force	21,024,395	17,328	159,710	17,000	3,044,990	24,263,423
Defense Agencies/OSD	3,784,550	—102,069	54,300	11,000	223,800	3,971,581
Civil Defense	101,100	— 1	-----	-----	-----	101,099
TOTAL—Military Functions	59,148,142	8,842	519,130	82,000	12,275,870	72,033,984
Military Assistance	792,000	—10,425	-----	-----	-----	781,575
TOTAL NOA—DOD	59,940,142	—1,583	519,130	82,000	12,275,870	72,815,559
Total Expenditures—DOD	58,300,000	-----	505,000	61,000	9,084,000	67,950,000

OASD (Comptroller)
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TABLE 11

Department of Defense
NET ADDITIONS TO THE FY 1967
PROCUREMENT PROGRAM FOR SOUTHEAST ASIA
 (Millions of Dollars)

	Army	Navy and Marine Corps	Air Force	Total
Ammunition	309	89	279	677
Aircraft				
Combat Attrition	14	1,073	438	1,525
Training and Other	258	135	46	439
Spares	149	314	533	996
Other A/C Equipment	169	329	257	755
Total Aircraft	590	1,851	1,274	3,715
Vehicles	288	167	51	506
Electronics and Communications	338	102	141	581
Other	607	131	110	*840
Total Changes in Program (TOA)	2,130	2,340	1,855	*6,317
Financing Adjustments	---	—48	+29	*—11
FY 1967 Supplemental (NOA)	2,130	2,292	1,884	6,306

* Reflects \$8 million reduction in Procurement, Defense Agencies program.

OASD (Comptroller)
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TABLE 12

Department of Defense
MAJOR PROCUREMENT ITEM QUANTITIES
FY 1967 and 1968 Programs

	FY 1967 program			FY 1968 program
	Enacted funds	Supplemental	Total	
Aircraft				
Army -----	1,807	890	2,697	1,479
Navy & Marine Corps -----	560	487	1,047	680
Air Force -----	821	207	1,028	1,250
Total—All Services -----				
Helicopters -----	1,903	863	2,766	1,588
Other aircraft -----	1,285	721	2,006	1,821
Total—All Services -----	3,188	1,584	4,772	3,409
Missiles				
Army -----	34,715	---	34,715	26,237
Navy & Marine Corps -----	6,172	1,992	8,164	12,815
Air Force -----	4,777	---	4,777	5,273
Total—Missiles -----	45,664	1,992	47,656	44,325
Ships—Navy				
New construction -----	57	---	57	34
Conversions -----	8	---	8	21
Total—Ships -----	65	---	65	55
Tracked combat vehicles				
Army -----	4,437	1,392	5,829	4,797
Marine Corps -----	144	7	151	--
Total—tracked combat vehicles -----	4,581	1,399	5,980	4,797

OASD (Comptroller)
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TABLE 13

Department of Defense
MILITARY AND CIVILIAN PERSONNEL
Yearend Number

	FY 1965 actual	FY 1966 actual	FY 1967 estimate	FY 1968 estimate
<i>Military Personnel</i>				
Army				
Officers -----	111,541	117,205	142,837	154,900
Enlisted -----	854,755	1,079,525	1,308,453	1,362,004
Military Academy cadets -----	2,017	2,316	2,910	3,096
Total—Army -----	968,313	1,199,046	1,454,200	1,520,000
Navy				
Officers -----	77,720	79,457	83,773	85,014
Enlisted -----	588,353	660,130	665,298	673,031
Naval Academy midshipmen -----	4,179	4,331	4,243	4,243
Aviation cadets -----	757	551	80	---
Total—Navy -----	671,009	744,469	753,394	762,288
Marine Corps				
Officers -----	17,234	20,485	24,193	25,211
Enlisted -----	172,638	240,909	255,831	269,316
Aviation cadets -----	315	293	600	387
Total—Marine Corps -----	190,187	261,687	280,624	294,914
Air Force				
Officers -----	131,141	130,285	135,986	137,828
Enlisted -----	689,585	752,913	759,250	745,697
Air Force Academy cadets -----	2,907	3,152	3,364	3,575
Total—Air Force -----	823,633	886,350	898,600	887,100

(Continued Page 52)

TABLE 13 (Continued)

Department of Defense
MILITARY AND CIVILIAN PERSONNEL
Yearend Number

	FY 1965 actual	FY 1966 actual	FY 1967 estimate	FY 1968 estimate
Department of Defense Total				
Officers -----	337,636	347,432	386,789	402,953
Enlisted -----	2,305,331	2,733,477	2,988,832	3,050,048
Academy cadets and midshipmen -----	9,103	9,799	10,517	10,914
Aviation cadets -----	1,072	844	680	387
Total—Defense -----	2,653,142	3,091,552	3,386,818	3,464,302
<i>Civilian Personnel</i>				
Army -----	332,875	371,121	426,164	431,474
Navy -----	333,271	356,744	398,608	410,787
Air Force -----	291,496	306,911	319,462	325,796
Defense Agencies/OSD -----	42,278	68,923	72,361	72,057
Total—Defense -----	999,920	1,103,699	1,216,595	1,240,114

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Contract Funds Status Report Approved by Bureau of the Budget

During December 1966 the Bureau of the Budget (BOB) approved the quarterly contractor reporting requirements described by DOD Instruction 7800.7, "Contract Funds Status Report" (CFSR). BOB's approval followed extensive coordination between industry representatives and Defense officials.

DOD and industry have a mutual interest in information about funding. The DOD manager must assure the adequacy of the funds for varied Defense programs and at the same time exercise administrative fund controls on appropriations required by public law. Industry, on the other hand, is vitally concerned about receiving timely payments in appropriate amounts. Funds reporting has evolved from the need to satisfy both needs.

The first effort for uniform application throughout DOD in this area occurred in 1959 with the development of the Financial Management Report, DD 1097. This report was designed to be used essentially to assess potential expenditure levels. As expenditure restraints eased, it was adapted to answer funding status questions. This report proved to be inadequate from both industry and DOD points of view. To overcome its deficiencies, individual report versions were designed by the Military Departments to provide their representatives with better information. These reports were limited to a small number of contractors and, thus, did not require BOB approval.

To curb the tendency toward proliferation of data gathering efforts on this subject, DOD in 1964 undertook

to install a single uniform approach for DOD-wide use. The resulting Contract Funds Status Report was developed through continuous consultation with industry. These consultations started in 1964 as a part of the Cost and Economic Information System (CEIS). During March 1966, industry, through the Council of Defense Space and Industry Associations (CODSIA), was provided a draft version of the CFSR reporting instruction. CODSIA comments and recommendations were received in May 1966, and a series of joint DOD-industry meetings was held in late summer to discuss the CODSIA recommendations. Many changes were made to the original proposal as a result of industry comments. CFSR has benefited from this exposure. It can become a useful, workable document that will serve the needs of both DOD and industry.

In gaining BOB approval, the CFSR joins the Cost Information Reports (CIR) and the Economic Information System (EIS) as visible parts of the Selected Acquisitions Information and Management Systems (SAIMS).

The CFSR is designed to supply the funding data that, with other performance measurement inputs, will provide information about Defense contracts to DOD managers for:

- Updating and forecasting contract fund requirements.
- Planning and decision making on funding changes in contracts.
- Developing fund requirements and

budget estimates in support of approved programs.

The contractor compares current funding with estimated fund requirements and describes the relative firmness of requirements on which estimates are based. Reasons for changes in quantitative fund requirements are also to be submitted.

In view of the lead time required to adjust approved levels of funding when changes in estimated fund requirements are involved, reporting accurate information as early as possible is a matter of pronounced importance to the contracting parties (DOD and industry) who must use the information.

The CFSR will be implemented on all new contracts, which require funds status reporting, to replace reports such as the DD 1097, DD 1097 Addendum NAVWEPS 7810/4, and the Contractor Financial Requirements Estimate (CFRE). If suitable arrangements to incorporate this reporting requirement can be made, the current use of the aforementioned reports will be discontinued in existing contracts. The instructions (DOD Instruction 7800.7) include descriptions of data items which are the contractor's required input to the CFSR.

Questions concerning the implementation of CFSR should be referred to the Directorate for Assets Management Systems, Office of the Assistant Secretary of Defense (Comptroller), Room 3B 857, The Pentagon, Washington, D.C., 20301, Telephone (202) OXford 7-7565.



DEFENSE PROCUREMENT

Contracts of \$1,000,000 and over awarded during the month of January 1967:

DEFENSE SUPPLY AGENCY

- 3—Lester D. Lawson & Co., Long Beach, Calif. \$1,153,350. 33,000 cases of ration supplement sundries packs. Defense Personnel Support Center, Philadelphia, Pa.
- Van Brode Milling Co., Clinton, Mass. \$1,144,867. 33,060 cases of ration supplement sundries packs. Defense Personnel Support Center, Philadelphia, Pa.
- Rachelle Laboratories, Long Beach, Calif. \$1,108,153. 551,320 bottles of tetracycline hydrochloride. Defense Personnel Support Center, Philadelphia, Pa.
- Landis Clothes, Vineland, N.J. \$1,041,747. 43,370 men's polyester and wool coats. Defense Personnel Support Center, Philadelphia, Pa.
- Joseph H. Cohen & Sons, Philadelphia, Pa. \$1,269,355. 39,500 men's polyester and wool coats. Defense Personnel Support Center, Philadelphia, Pa.
- Irwin Mills, Division of Burlington Industries, New York City, N.Y. \$1,027,742. 631,360 white cotton bed sheets. Defense Personnel Support Center, Philadelphia, Pa.
- Endicott Johnson Corp., Endicott, N.Y. \$1,067,032. 100,000 pairs of shoes. Defense Personnel Support Center, Philadelphia, Pa.
- Pioneer Bag Co., North Kansas City, Mo. \$1,255,500. 5,000,000 sandbags. Defense General Supply Center, Richmond, Va.
- Continental Wire Corp., York, Pa. \$1,532,610. 958,500 feet of shipboard cable. Defense Industrial Supply Center, Philadelphia, Pa.
- Okonite Co., Passaic, N.J. \$1,036,778. 515,200 feet of shipboard cable. Defense Industrial Supply Center, Philadelphia, Pa.
- 4—The Defense Personnel Support Center, Philadelphia, Pa., has awarded the following contracts for cotton duck cloth:
 - B. G. Colton & Co., New York City, N.Y. \$1,733,697. 2,250,000 square yards.
 - American Finishing Co., Memphis, Tenn. \$1,629,205. 2,094,219 square yards.
 - Graniteville Co., New York City, N.Y. \$2,080,881. 2,206,521 square yards.
 - Putnam Mills, New York City, N.Y. \$5,035,651. 6,455,000 square yards.
 - Saddler Textiles, Inc., New York City, N.Y. \$1,289,418. 1,774,000 square yards.
- Bern Kane Products, Inc., Brooklyn, N.Y. \$1,041,000. 100,000 folding canvas cots. Defense General Supply Center, Richmond, Va.
- 5—A. M. Ellis Hosiery Co., Philadelphia, Pa. \$1,179,356. 1,451,320 pairs of men's cotton and nylon socks. Defense Personnel Support Center, Philadelphia, Pa.
- Rachman Mfg. Co., Reading, Pa. \$1,338,240. 492,000 helmet liner insulating caps. Defense Personnel Support Center, Philadelphia, Pa.
- Cherubino Petti & Co., Atlantic City, N.J. \$1,742,250. 75,000 men's polyester and wool tropical coats. Defense Personnel Support Center, Philadelphia, Pa.
- Burlington Industries, Pacific Mills Div., New York City, N.Y. \$3,480,000. 1,000,000 linear yds of wool serge cloth. Defense Personnel Support Center, Philadelphia, Pa.

CONTRACT LEGEND

Contract information is listed in the following sequence: Date—Company—Value—Material or Work to be Performed—Location Work Performed—Contracting Agency.

- Pembroke, Inc., Egg Harbor City, N.J. \$4,115,700. 90,000 men's wool gabardine overcoats. Defense Personnel Support Center, Philadelphia, Pa.
- Foster Co., Philadelphia, Pa. \$2,862,510. 64,500 men's wool gabardine overcoats. Defense Personnel Support Center, Philadelphia, Pa.
- Neptune Raincoat Co., New York City, N.Y. \$4,327,000. 100,000 men's wool gabardine overcoats. Defense Personnel Support Center, Philadelphia, Pa.
- Prestex, Inc., New York City, N.Y. \$1,190,632. 3,144,000 linear yds. of polyester and cotton fabric. Defense Personnel Support Center, Philadelphia, Pa.
- Deering Milliken, Inc., New York City, N.Y. \$3,752,749. 1,086,500 linear yds. of wool gabardine cloths. Defense Personnel Support Center, Philadelphia, Pa.
- Burlington Industries, Inc., New York City, N.Y. \$1,006,895. 1,053,000 linear yds. of cotton twill cloth. Defense Personnel Support Center, Philadelphia, Pa.
- J. P. Stevens & Co., New York City, N.Y. \$4,138,041. 4,500,000 linear yds. of cotton twill cloth. Defense Personnel Support Center, Philadelphia, Pa.
- C. M. London Co., New York City, N.Y. \$1,815,100. 2,000,000 square yds. of cotton twill cloth. Defense Personnel Support Center, Philadelphia, Pa.
- Chatham Mfg. Co., Elkin, N.C. \$3,208,388. 436,776 wool blankets. Defense Personnel Support Center, Philadelphia, Pa.
- Burlington Industries, Cleveland Woolens Div., Cleveland, Tenn. \$3,567,039. 500,000 wool blankets. Defense Personnel Support Center, Philadelphia, Pa.
- Bern Kane Products, Brooklyn, N.Y. \$1,041,000. 100,000 folding canvas cots. Defense General Supply Center, Richmond, Va.
- 9—United Aircraft, Hartford, Conn. \$1,871,448. Aircraft bearings. Hartford. Defense Industrial Supply Center, Philadelphia, Pa.
- 10—U.S. Rubber, Providence, R.I. \$3,767,700. 7,600 fuel drums (500-gallon). Defense General Supply Center, Richmond, Va.
- Davis Sportswear Co., Lawrence, Mass. \$2,363,900. 55,000 men's wool gabardine overcoats. Defense Personnel Support Center, Philadelphia, Pa.
- Gentry Clothing Co., Philadelphia, Pa. \$2,229,500. 50,000 men's wool gabardine overcoats. Defense Personnel Support Center, Philadelphia, Pa.
- 11—Dow Chemical Co., Midland, Mich. \$4,548,000. Chemicals. Defense General Supply Center, Richmond, Va.
- H. Wenzel Tent & Duck Co., St. Louis, Mo. \$2,709,745. 11,500 small-sized general purpose tents. Defense Personnel Support Center, Philadelphia, Pa.
- 16—J. P. Stevens & Co., New York City, N.Y. \$1,567,919. 901,600 yds. of wind-resistant cotton oxford cloth. Defense Personnel Support Center, Philadelphia, Pa.
- Macshore Classics, Inc., New York City, N.Y. \$2,625,000. 700,000 men's wind-resistant cotton poplin coats. Defense Personnel Support Center, Philadelphia, Pa.
- Bonham Mfg. Co., Bonham, Tex. \$1,690,800. 400,000 men's wind-resistant cotton poplin coats. Defense Personnel Support Center, Philadelphia, Pa.
- 17—Addison Shoe Corp., Wynne, Ark. \$1,222,374. 120,000 pairs of safety traction tread shoes. Defense Personnel Support Center, Philadelphia, Pa.
- 18—Marathon Oil Co., New York City, N.Y. \$2,046,209. 520,000 barrels of grade DF-1 diesel oil. Defense Fuel Supply Center, Alexandria, Va.
- Hayward Schuster Woollen Mills, East Douglas, Mass. \$1,342,906. 167,920 woolen blankets. Defense Personnel Support Center, Philadelphia, Pa.
- A. G. Dewey Co., Enfield, N.H. \$1,100,605. 137,760 woolen blankets. Defense Personnel Support Center, Philadelphia, Pa.
- 19—Coastal States Petrochemical Co., Houston, Tex. \$1,594,950. 14,700,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- Atlantic Richfield Co., Philadelphia, Pa. \$1,467,900. 12,600,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- 23—Bluebell, Inc., Greensboro, N.C. \$1,002,750. 500,000 men's cotton khaki trousers. Defense Personnel Support Center, Philadelphia, Pa.
- 24—J. P. Stevens, Inc., New York City, N.Y. \$1,300,000. 650,000 yards of wool and polyester cloth. Defense Personnel Support Center, Philadelphia, Pa.
- 25—Irving Air Chute Co., Lexington, Ky. \$1,521,284. 6,840 small-size general purpose tents. Defense Personnel Support Center, Philadelphia, Pa.
- M. Sloane Mfg. Co., Chelsea, Mass. \$1,381,350. 5,000 medium-size general purpose tents. Defense Personnel Support Center, Philadelphia, Pa.
- J. P. Stevens & Co., New York City, N.Y. \$1,114,515. 619,000 linear yds. of cloth. Defense Personnel Support Center, Philadelphia, Pa.
- 26—Nantex-Riviera Corp., New York City, N.Y. \$2,451,696. 5,000,000 pairs of men's cotton shorts. Defense Personnel Support Center, Philadelphia, Pa.
- Van Brode Milling Co., Clinton, Mass. \$2,212,740. 64,380 cases of ration supplement sundries packs. Defense Personnel Support Center, Philadelphia, Pa.
- Lester D. Lawson & Co., Long Beach, Calif. \$2,261,889. 67,620 cases of ration supplement sundries packs. Defense Personnel Support Center, Philadelphia, Pa.
- 27—Sun Oil Co., Philadelphia, Pa. \$2,041,200. 18,900,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- Humble Oil & Refining Co., Houston, Tex. \$1,637,160. 16,800,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- Coastal States Petrochemical Co., Houston, Tex. \$1,342,656. 12,600,000 gallons of JP-4 fuel. Defense Fuel Supply Center, Alexandria, Va.
- Hess Oil & Chemical Corp., Perth Amboy, N.J. \$1,320,606. 12,600,000 gallons of JP-4 jet fuel. Defense Fuel Supply Center, Alexandria, Va.
- 31—Dow Chemical Co., Midland, Mich. \$1,217,625. 170,000 gallons of chemicals. Defense General Supply Center, Richmond, Va.
- Armstrong Products Co., Huntington, W. Va. \$1,626,995. 8,600 field range burner units, 4,300 field range cabinets and associated spare parts. Defense General Supply Center, Richmond, Va.

DEFENSE COMMUNICATIONS AGENCY

- 6—System Sciences Corp., Falls Church, Va. \$3,000,000. Continuation of engineering services in support of the Defense Communications Agency's satellite communications project in CY 1967.

ARMY

- 3—Western Electric, New York City, N.Y. \$3,200,000. FY 1967 Nike Hercules and improved Nike Hercules engineering services. Burlington, N.C.; Syracuse, N.Y.; and Santa Monica, Calif. Army Missile Command, Huntsville, Ala.
- Hallicrafters, Chicago, Ill. \$1,383,000. Engineering development service test models of a countermeasure set. Chicago. Army Electronics Command, Fort Monmouth, N.J.
- Seattle Stevedore Co., Seattle, Wash. \$12,867,332. Stevedoring services and related terminal services at the Navy Supply Depot, Seattle, Wash., for the period of Feb. 1, 1967 through Jan. 31, 1969. Western Area, Military Traffic Management and Terminal Service, Oakland, Calif.
- 4—Piasek Aircraft Corp., Mayfield, Pa. \$1,252,101. Cable assemblies. Mayfield. Army Electronics Command, Philadelphia, Pa.

- Darragh & Lyda, San Antonio, Tex. \$1,027,201. Construction of a medical laboratory at Fort Sam Houston, Tex. Engineer Dist., Fort Worth, Tex.
- 5—Browning Construction Co., San Antonio, Tex. \$5,089,900. Construction of a recruit training and housing facility at Lackland AFB, Tex. Engineer Dist., Fort Worth, Tex.
- 6—Colt's Inc., Hartford, Conn. \$1,581,159. M16/XM16E1 rifle magazine assemblies. Hartford. Army Weapons Command, Rock Island Arsenal, Ill.
- Guy H. James Construction Co., Oklahoma City, Okla. \$10,538,665. Work on the Arkansas River and tributaries, Arkansas and Oklahoma Project. Wagoner County, Okla. Engineer Dist., Tulsa, Okla.
- 9—Bauer Dredging Co., New York City, N.Y. \$2,706,247. Dredging work on the Hampton Roads, Va., Channel Deepening Project. Engineer Dist., Norfolk, Va.
- 10—Scovill Mfg. Co., Waterbury, Conn. \$1,350,000. Grenade fuzes. Waterbury. Ammunition Procurement & Supply Agency, Joliet, Ill.
- 11—Weymouth Construction Co., Memphis, Tenn. \$2,487,800. Work on the Mississippi River and Tributaries—Flood Control Reventments Project. St. Francisville, La. Engineer Dist., New Orleans, La.
- Defense Metal Products, Sylacauga, Ala. \$8,642,623. Metal parts for 155mm projectiles. Sylacauga. Ammunition Procurement & Supply Agency, Joliet, Ill.
- 12—Emerson Electric Co., St. Louis, Mo. \$7,711,285. Armament subsystems (XM-28) for Cobra helicopters. St. Louis. Army Weapons Command, Rock Island, Ill.
- Bell Helicopter Co., Fort Worth, Tex. \$1,350,000. UH-1E helicopters for the Navy. Hurst, Tex. Army Aviation Materiel Command, St. Louis, Mo.
- Global Associates, Oakland, Calif. \$4,069,037. Aircraft maintenance and operations. Kwajalein Test Site, Marshall Islands. Redstone Arsenal, Huntsville, Ala.
- Aero Service Corp., Philadelphia, Pa. \$5,143,630. Aerial mapping work. Philadelphia. Army Map Service, Washington, D.C.
- 13—Norris Industries, Vernon, Calif. \$1,470,192. Training projectiles. Vernon. Ammunition Procurement & Supply Agency, Joliet, Ill.
- J. A. Jones Construction Co., Nashville, Tenn. \$21,614,500. Rehabilitation and reactivation of two production lines with supporting facilities at the Holston Army Ammunition Plant, Kingsport, Tenn. Engineer Dist., Mobile, Ala.
- Raytheon Co., Lexington, Mass. \$4,013,020. Retrofit kits for the Hawk missile system. Andover, Mass. Army Missile Command, Huntsville, Ala.
- Mason & Hanger, Silas Mason & Co., Lexington, Ky. \$1,136,618. Loading, assembling and packing of ammunition. Burlington, Iowa. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Northrop Corp., Anaheim, Calif. \$2,270,448. Facilities to produce ordnance projectiles. Anaheim. Picatinny Arsenal, Dover, N.J.
- McCarthy Bros. Construction Co., Ladue, Mo. \$3,876,324. Work on the St. Louis Flood Protection Project. St. Louis. Engineer Dist., St. Louis, Mo.
- Karam Construction Co., El Paso, Tex. \$3,132,273. Construction of 30 one-story enlisted men's barracks; three mess halls; three headquarters and classroom buildings; and all supporting utilities. Fort Bliss, Tex. Engineer Dist., Albuquerque, N.M.
- A. G. Schoonmaker Co., Sausalito, Calif. \$2,537,101. Construction of a land based power plant on Kwajalein Atoll. Engineer Dist., Honolulu, Hawaii.
- 16—General Tire & Rubber Co., Akron, Ohio. \$1,551,636. Pneumatic tires for use on various trucks, trailers and semi-trailers. Waco, Tex. Army Tank Automotive Command, Warren, Mich.
- R. G. LeTourneau, Inc., Longview, Tex. \$3,154,800. Metal parts for 750-lb bombs. Longview. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Fontaine Truck Equipment Co., Birmingham, Ala. \$2,532,948. 25-ton semi-trailers. Halesville, Ala. Army Tank Automotive Command, Warren, Mich.
- Amron Corp., Waukesha, Wis. \$1,300,000. Brass cups for 20mm M103 cartridge cases. Waukesha. Frankford Arsenal, Philadelphia, Pa.
- 17—Kellett Aircraft Corp., Willow Grove, Pa. \$1,060,000. Field photographic laboratories and components. Willow Grove. Army Electronics Command, Philadelphia, Pa.
- Ford Motors, Dearborn, Mich. \$2,844,119. Trucks. Lorain, Ohio. Army Tank Automotive Center, Warren, Mich.
- Jacks-Evans Mfg. Co., St. Louis, Mo. \$2,140,610. 7.62mm cartridge belt links. St. Louis. Frankford Arsenal, Philadelphia, Pa.
- AVCO Corp., Stratford, Conn. \$1,404,000. T53-L-15 engines for the OV-1 helicopter (Mohawk). Stratford. Army Aviation Materiel Command, St. Louis, Mo.
- 18—Hesse-Eastern Division of Norris Industries, Everett, Mass. \$2,277,085. 66mm rocket launchers. Brockton, Mass. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Gibb Mfg. & Research Corp., Janesville, Wis. \$1,135,350. Fuze adapters for use on 81mm mortar cartridges. Janesville. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Eureka Williams Co., Bloomington, Ill. \$1,450,240. Hand grenade fuze assemblies. Bloomington. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Talley Industries, Mesa, Ariz. \$2,810,667. Hand grenades. Mesa. Edgewood Arsenal, Md.
- Robert E. McKee General Contractors, Inc., Santa Fe, N.M. \$3,912,655. Work on the Albuquerque Diversion Channel Project. Albuquerque, N.M. Engineer Dist., Albuquerque, N.M.
- 19—Thurmont Construction Co., Thurmont, Md. \$1,337,489. Construction at Fort Detrick, Md. Engineer Dist., Baltimore, Md.
- Philco-Ford Corp., Newport Beach, Calif. \$1,377,805. 40mm grenade launchers. Newport Beach. Army Weapons Command, Rock Island, Ill.
- 20—Sperry Rand Corp., New York City, N.Y. \$17,846,914. Ordnance items. Shreveport, La. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Remington Arms Co., Bridgeport, Conn. \$2,494,560. Miscellaneous small arms ammunition. Independence, Mo. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Mason & Hanger, Silas Mason & Co., Lexington, Ky. \$21,907,370. Classified items. Burlington, Iowa. Ammunition Procurement & Supply Agency, Joliet, Ill.
- U.S. Rubber Co., New York City, N.Y. \$12,555,139. Ordnance items and additional reactivation funds and O&MA activities. Joliet, Ill. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Raytheon Co., Bristol, Tenn. \$1,936,026. Metal fuze parts for 750-lb bombs. Bristol. Ammunition Procurement & Supply Agency, Joliet, Ill.
- MEVA Corp., Cocoa, Fla. \$1,223,796. Power system supervisory controls, telemetry and capacitor installation for launch complex 39. Merritt Island, Fla. Engineer Dist., Merritt Island, Fla.
- General Motors, Indianapolis, Ind. \$7,473,600. T63-A-5A engines and data for LOH aircraft. Indianapolis. Army Aviation Materiel Command, St. Louis, Mo.
- General Electric, Burlington, Mass. \$2,509,200. M-85 machine guns and inspection and test equipment. Springfield, Mass. Army Weapons Command, Rock Island, Ill.
- 23—Day & Zimmerman, Philadelphia, Pa. \$7,613,452. Loading, assembling and packing of medium caliber ammunition and miscellaneous components. Philadelphia. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Hercules Engines, Canton, Ohio. \$4,521,000. Multi-fuel engine assemblies for five-ton trucks. Canton. Army Tank Automotive Command, Warren, Mich.
- Stolte, Inc., Oakland, Calif. \$2,012,048. Construction of two 180-man, five-story bachelor officers quarters at Camp Kue and Machinato Service Area, Okinawa. Engineer Dist., Okinawa.
- Sante Fe Engineers and Stolte, Inc., and DBA S&S Constructions, Lancaster, Calif. \$17,217,217. Construction of Space Launch Complex No. 6 at Vandenberg AFB, Calif. Engineer Dist., Los Angeles, Calif.
- Olin Mathieson Chemical Corp., New Haven, Conn. \$1,196,000. 20mm cartridges. LaPorte, Ind. Frankford Arsenal, Philadelphia, Pa.
- 25—Lakeside Bridge and Steel Co., Milwaukee, Wis. \$1,127,247. Work on the Ozark Lock and Dam, Arkansas River, Project. Ozark, Ark. Engineer Dist., Little Rock, Ark.
- 26—RCA, Camden, N.J. \$7,419,982. Radio sets. Camden. Army Electronics Command, Philadelphia, Pa.
- Intercontinental Mfg. Co., Garland, Tex. \$2,421,100. Metal parts for Nike-Hercules rocket motors. Garland. Army Missile Command, Huntsville, Ala.
- 27—Chrysler Motors, Detroit, Mich. \$1,014,523. One-ton cargo trucks and ambulances. Warren, Mich. Army Tank Automotive Command, Warren, Mich.
- Sperry Rand Corp., St. Paul, Minn. \$6,500,000. Classified electronics equipment. St. Paul. Army Electronics Command, Fort Monmouth, N.J.
- A. O. Smith Corp., Chicago, Ill. \$7,910,789. Metal parts for demolition bombs. Waco, Tex. Ammunition Procurement & Supply Agency, Joliet, Ill.
- American Machine & Foundry Co., Brooklyn, N.Y. \$3,233,272. Metal parts for demolition bombs. Garden City, N.Y. Ammunition Procurement & Supply Agency, Joliet, Ill.
- 30—Hercules, Inc., Wilmington, Del. \$7,553,114. Grain propellant and operations and maintenance activities. Lawrence, Kan. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Hughes Aircraft, Fullerton, Calif. \$1,748,938. Engineering services in support of the Air Defense Fire Distribution System. Fullerton. Army Missile Command, Huntsville, Ala.
- General Motors, Detroit, Mich. \$2,168,168. Trucks. Detroit. Army Tank Automotive Command, Warren, Mich.
- International Harvester Co., Chicago, Ill. \$2,623,156. Buses. Lima, Ohio. Army Tank Automotive Command, Warren, Mich.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$4,640,556. 20mm cartridge propellant. East Alton. Frankford Arsenal, Philadelphia, Pa.
- DeMauro Construction Corp., Naha, Okinawa. \$1,602,185. Construction of various buildings and their exterior utilities at Machinato Service Area, Okinawa. Engineer Dist., Okinawa.
- 31—Hercules, Inc., Wilmington, Del. \$4,506,535. Miscellaneous propellants and explosives and operations and maintenance activities. Radford, Va. Ammunition Procurement & Supply Agency, Joliet, Ill.
- National Gypsum Co., Buffalo, N.Y. \$8,580,784. Classified items and operations and maintenance activities. Parsons, Kan. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Harvey Aluminum Sales, Inc., Torrance, Calif. \$1,040,464. Classified items and operations and maintenance activities. Milan, Tenn. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Thiokol Chemical Corp., Bristol, Pa. \$22,710,525. Loading, assembling and packing of miscellaneous illuminating projectiles, and operations and maintenance activities. Marshall, Tex. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$5,497,048. Activation of rocket propellant facilities and operations and maintenance activities. Baraboo, Wis. Ammunition Procurement & Supply Agency, Joliet, Ill.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$1,597,064. 7.62mm cartridges. East Alton. Frankford Arsenal, Philadelphia, Pa.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$1,628,937. 5.56mm cartridges. East Alton. Frankford Arsenal, Philadelphia, Pa.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$4,263,585. 7.62mm cartridges. East Alton. Frankford Arsenal, Philadelphia, Pa.
- Olin Mathieson, New Haven, Conn. \$6,810,264. 7.62mm cartridges. New Haven. Frankford Arsenal, Philadelphia, Pa.
- Federal Cartridge Corp., Anoka, Minn. \$1,946,670. 5.56mm cartridges. Anoka. Frankford Arsenal, Philadelphia, Pa.
- Remington Arms Co., Bridgeport, Conn. \$2,802,514. 5.56mm cartridges. Bridgeport. Frankford Arsenal, Philadelphia, Pa.
- Remington Arms Co., Bridgeport, Conn. \$4,937,920. 1.62mm and 7.62mm cartridges. Bridgeport. Frankford Arsenal, Philadelphia, Pa.
- Amron Corp., Waukesha, Wis. \$1,024,000. 20mm projectiles. Waukesha. Frankford Arsenal, Philadelphia, Pa.
- Chrysler Corp., Centerline, Mich. \$1,222,703. Engineering services in support of M60A1E2, M60A1, M48A3 and M48A4 combat tanks. Centerline. Army Tank Automotive Center, Warren, Mich.
- International Harvester Co., Chicago, Ill. \$1,308,307. Tractor trucks. Fort Wayne, Ind. Army Tank Automotive Center, Warren, Mich.
- Johnson Corp., Bellevue, Ohio. \$3,147,328. Chassis trailers for 3½-ton M353 vehicles.

Bellevue. Army Tank Automotive Center, Warren, Mich.

- Loadercraft, Inc.**, Denton, Tex. \$1,023,568. Six-ton semi-trailers. Brady, Tex. Army Tank Automotive Center, Warren, Mich.
- RCA**, Camden, N.J. \$3,062,629. Radio sets and additional technical requirements. Camden. Army Electronics Command, Philadelphia, Pa.
- General Dynamics**, Rochester, N.Y. \$1,607,088. Radio sets and components. Rochester. Army Electronics Command, Philadelphia, Pa.
- Brunswick Corp.**, Sugar Grove, Va. \$1,167,381. Bombs. Sugar Grove. Edgewood Arsenal, Md.
- Mine Safety Appliance Co.**, Pittsburgh, Pa. \$2,054,500. Field protective masks. Esmond, R.I. Edgewood Arsenal, Md.
- AVCO Corp.**, Stratford, Conn. \$4,502,413. Turbine nozzles and gear box assemblies for T-53 turbine engines. Stratford. Army Aviation Materiel Command, St. Louis, Mo.
- Hughes Tool Co.**, Culver City, Calif. \$4,760,400. Light observation helicopters and related special tools. Culver City. Army Aviation Materiel Command, St. Louis, Mo.

NAVY

- 3—**Sylvania Electric Products**, Mountain View, Calif. \$2,000,000. Direction finder equipment. Mountain View. Naval Ship Systems Command.
- Dyson & Co.**, Pensacola, Fla. \$1,432,900. Construction of an aircraft rework hanger at the Pensacola, Fla., Naval Air Station. Southeast Div., Naval Facilities Engineering Command.
- Harvey Aluminum**, Torrance, Calif. \$1,726,367. MK14 MOD O, 20mm projectiles. Torrance. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Chaney & James Co.**, Richardson, Tex. \$1,414,000. Construction of an 800-unit airman's dormitory at Barksdale AFB, La. Gulf Div., Naval Facilities Engineering Command.
- 4—**Grumman Aircraft Engineering Corp.**, Bethpage, N.Y. \$22,550,000. A-6A aircraft. Bethpage. Naval Air Systems Command.
- LTV Aerospace Corp.**, Dallas, Tex. \$36,500,614. A-7B aircraft. Dallas. Naval Air Systems Command.
- United Aircraft**, Stratford, Conn. \$1,400,000. Long lead time effort and materials to support procurement of HH-3E helicopters for the Air Force. Stratford. Naval Air Systems Command.
- McDonnell Co.**, St. Louis, Mo. \$134,604,533. F-4E aircraft for the Air Force. St. Louis. Naval Air Systems Command.
- Boeing Co.**, Morton, Pa. \$18,270,000. CH-46D helicopters. Naval Air Systems Command.
- Lockheed Aircraft**, Burbank, Calif. \$12,120,000. Long lead time effort and materials to support FY 1967 procurement of P-3B aircraft. Burbank. Naval Air Systems Command.
- U. S. Steel**, Pittsburgh, Pa. \$1,330,881. Bullup guided missile warheads. McKeesport, Pa. Naval Air Systems Command.
- Peterson Builders**, Sturgeon Bay, Wis. \$5,824,290. Construction of three coastal minesweepers. Sturgeon Bay. Naval Ship Systems Command.
- Liberty Aero, Inc.**, Farmingdale, N.Y. \$1,239,292. LAW-34/A guided missile launchers. Farmingdale. Navy Purchasing Office, Washington, D.C.
- Baifield Industries**, Carrollton, Tex. \$11,128,137. Mark 15 retard fins used with MK 82 bombs. Carrollton, Tex. and Shreveport, La. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- 5—**United Aircraft**, Windsor Locks, Conn. \$1,460,000. Propeller systems used on P-3B aircraft. Windsor Locks. Navy Aviation Supply Office, Philadelphia, Pa.
- Lasko Metal Products, Inc.**, Westchester, Pa. \$3,104,064. Mark 14 bomb fins assemblies used on 250-lb MK 81 bombs. Westchester. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- 6—**Westinghouse Electric**, Baltimore, Md. \$4,406,900. AN/APQ-109 radar for the Air Force. Baltimore. Naval Air Systems Command.
- Teledyne Systems**, Hawthorne, Calif. \$8,000,000. Self-contained navigation systems. Hawthorne. Naval Air Systems Command.
- United Aircraft**, Stratford, Conn. \$4,859,600. SH-3D helicopters. Bridgeport, Conn. Naval Air Systems Command.

- Boeing Co.**, Morton, Pa. \$19,597,696. CH-46A and UH-46A helicopters. Morton. Naval Air Systems Command.
- Sanders Associates**, Nashua, N.H. \$2,790,645. Design, fabrication and test of classified electronics equipment. Nashua. Naval Ship Systems Command.
- 9—**Grumman Aircraft Engineering Corp.**, Bethpage, L.I., N.Y. \$10,000,000. Research and development work on EA6B aircraft. Bethpage. Naval Air Systems Command.
- Nacirema Operating Co.**, Baltimore, Md. \$1,477,992. On-base stevedoring services and terminal warehousing operations. Naval Operating Base, Norfolk. Naval Supply Center, Norfolk, Va.
- Sperry Gyroscope Co.**, Great Neck, N.Y. \$1,773,210. Repair parts for navigational equipment used on Polaris submarines. Great Neck. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Todd Shipyards**, San Pedro, Calif. \$1,598,738. Topsides overhaul of the oiler USS PLATTE (AO-24). San Pedro. Naval Ship Systems Command.
- 10—**Hughes Aircraft**, Fullerton, Calif. \$1,690,700. Design, development, and test of nine beacon video processors, and associated equipment for the Naval Tactical Data System. Fullerton. Naval Ship Systems Command.
- Todd Shipyards**, Seattle, Wash. \$1,592,308. Regular overhaul of the landing ship, dock USS Whetstone (LSD-27). Seattle. Supervisor of Shipbuilding, 13th Naval Dist., Seattle, Wash.
- Maxson Electronics Corp.**, Macon, Ga. \$1,262,134. Detonation primers for five-inch projectiles. Macon. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Columbus Milpar & Mfg. Co.**, Columbus, Ohio. \$3,843,300. Bomb fins. Columbus. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- 11—**General Motors**, Indianapolis, Ind. \$1,440,700. Development and testing of a gas turbine engine for VS(X) ASW missions. Indianapolis. Naval Air Systems Command.
- LTV Aerospace Corp.**, Dallas, Tex. \$4,000,000. Long lead time effort to support FY 1968 procurement of materials to extend service life of F-8A/B/C aircraft. Dallas. Naval Air Systems Command.
- General Electric**, West Lynn, Mass. \$1,559,300. Development and testing of a gas turbine engine for VX(X) ASW missions. West Lynn. Naval Air Systems Command.
- McDonnell Co.**, St. Louis, Mo. \$53,000,000. F-4E and RF-4C aircraft for the Air Force. St. Louis. Naval Air Systems Command.
- 12—**TRW Inc.**, Redondo Beach, Calif. \$12,054,987. Performance of system analysis and engineering laboratory experimentation for anti-submarine warfare systems. Redondo Beach. Naval Ordnance Systems Command.
- RCA**, Harrison, N.J. \$2,001,375. Electron tubes for shipboard surface-search radar systems. Harrison. Navy Electronics Supply Office, Great Lakes, Ill.
- General Instrument Corp.**, Chicopee, Mass. \$1,384,790. Bomb fuzes. Chicopee. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Lansdowne Steel & Iron Co.**, Morton, Pa. \$1,464,450. Projectiles for five-inch 54 caliber guns. Morton. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Westinghouse Electric**, Baltimore, Md. \$1,349,470. Radar components. Baltimore. Naval Air Systems Command.
- Melpar, Inc.**, Falls Church, Va. \$1,105,900. Subsystems for airborne radar homing and warning sets. Falls Church. Naval Air Systems Command.
- Goodyear Aerospace Corp.**, Akron, Ohio. \$4,500,000. SUBROC missiles and related equipment. Akron. Naval Ordnance Systems Command.
- 16—**Westinghouse Electric**, Washington, D.C. \$1,103,938. Polaris launcher equipment. Sunnyvale, Calif. Special Project Office.
- Hughes Aircraft**, Fullerton, Calif. \$1,308,532. Ships command and control system equipment for the Naval Tactical Data System. Fullerton. Naval Ship Systems Command.
- Magnavox Co.**, Fort Wayne, Ind. \$1,000,000. Development of an air droppable ASW sonobuoy system. Fort Wayne. Naval Air Systems Command.
- Lear Siegler, Inc.**, Grand Rapids, Mich. \$4,500,000. Overhaul, modification and warrantee of AN/AJB-3A gyroscopes used on various attack and fighter aircraft. Grand Rapids, Mich. and Los Angeles,

- Calif. Navy Aviation Supply Office. Philadelphia, Pa.
- 17—**FMC Corp.**, San Jose, Calif. \$1,981,463. Design and conversion of an experimental landing craft. San Jose. Naval Ship Systems Command.
- Harvell-Kilgore Corp.**, Toone, Tenn. \$1,929,738. MK25, MOD 3 marine markers used in anti-submarine warfare. Toone. Naval Ships Parts Control Center, Mechanicsburg, Pa.
- FMC Corp.**, Minneapolis, Minn. \$1,951,845. Major components of the 5"/54 naval gun mount. Minneapolis. Naval Ordnance Station, Louisville, Ky.
- Western Electric**, New York City, N.Y. \$9,953,000. Oceanographic research. Whippany, N.J., Navy Purchasing Office, Washington, D.C.
- 18—**United Boatbuilders, Inc.**, Bellingham, Wash. \$1,070,000. Eight 36-foot hydrographic survey launches. Bellingham. Naval Ship Systems Command.
- AVCO Corp.**, Stratford, Conn. \$1,737,046. Constant speed drives for Navy aircraft. Stratford. Naval Air Systems Command.
- American Mfg. Co. of Tex.**, Fort Worth, Tex. \$6,732,265. MK 25, MOD O projectiles used in ammunition for 5"/38 naval guns. Fort Worth. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Lansdowne Steel & Iron Co.**, Morton, Pa. \$3,134,535. MK 25, MOD O projectiles used in ammunition for 5"/38 naval guns. Morton. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- 19—**Lockheed Aircraft Corp.**, Marietta, Ga. \$3,258,000. Progressive aircraft rework on C-130 aircraft. Marietta. Naval Air Systems Command.
- Sanders Associates**, Nashua, N.H. \$10,638,510. Classified electronic equipment. Nashua. Naval Air Systems Command.
- Westinghouse Electric Corp.**, Washington, D.C. \$51,701,833. Development of launcher and handling equipment for the Poseidon missile. Sunnyvale, Calif. Special Projects Office.
- Sperry Rand Corp.**, Syosset, N.Y. \$1,820,000. Technical assistance in support of the overhaul of the navigation subsystems aboard four Polaris submarines. Newport News, Va.; Portsmouth, N.H.; and Charleston, S.C. Naval Ship Systems Command.
- 20—**Control Data Corp.**, Minneapolis, Minn. \$2,362,000. Control Data 6400 Computer System for the Fleet Numerical Weather Facility, Monterey, Calif. Arden Hills, Minn. Naval Postgraduate School, Monterey, Calif.
- Sperry Rand Corp.**, Bristol, Tenn. \$3,405,247. Engineering services associated with the design and test evaluation effort for guidance and control sections of the Shrike Weapons System. Bristol. Navy Purchasing Office, Los Angeles, Calif.
- Jered Industries**, Birmingham, Mich. \$2,041,024. Three deck elevators used to move aircraft aboard the aircraft carrier USS Midway (CVA-41). Birmingham. Naval Supply Center, Oakland, Calif.
- Lockheed Missiles & Space Co.**, Sunnyvale, Calif. \$3,795,438. Poseidon research and development facilities. Sunnyvale. Special Projects Office.
- Sanders Associates**, Nashua, N.H. \$2,729,572. Classified training device. Nashua. Naval Training Device Center, Orlando, Fla.
- 23—**Norris Industries**, Los Angeles, Calif. \$1,683,459. Cartridge cases for 38 and 54-caliber projectiles. Vernon, Calif. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Collins Radio Co.**, Cedar Rapids, Iowa. \$3,083,607. Radio sets, accessory kits and repair parts for Navy ship and shore establishments. Cedar Rapids. Naval Ship Systems Command.
- Sanders Associates**, Nashua, N.H. \$1,106,830. Classified electronic equipment. Nashua. Naval Air Systems Command.
- LTV Electrosystems**, Greenville, Tex. \$1,034,723. Design, installation and testing of two electronic systems, associated equipment, supplies and services, technical documentation and reports. Bremerton, Wash. and Greenville. Naval Ship Systems Command.
- 24—**Therm-Air Mfg. Co.**, York, Pa. \$1,002,140. Air conditioners and related data. York. Naval Ship Systems Command.
- United Aircraft**, East Hartford, Conn. \$40,625,200. TF30-P-3 engines for the Air Force. East Hartford. Naval Air Systems Command.

- Sperry Rand Corp., Syosset, N.Y. \$16,958,000. Phase II development of inertial navigation subsystems for the Poseidon program for Fleet Ballistic Missile Submarines. Syosset. Naval Ship Systems Command.
- Lasko Metal Products, Westchester, Pa. \$2,216,046. LAV-10A launchers for the Zuni rocket. Westchester. Navy Ships Parts Control Center, Mechanicsburg, Pa.
- Collins Radio Co., Cedar Rapids, Iowa. \$1,339,677. Components of airborne radio communication equipment. Cedar Rapids. Navy Aviation Supply Office, Philadelphia, Pa.
- 25—AlSCO, Inc., St. Louis, Mo. \$4,091,639. Rocket launchers. St. Louis. Naval Air Systems Command.
- Otis Elevator Co., Stamford, Conn. \$2,400,000. Production of unit trainer devices for the Sheridan Weapon System. Stamford. Naval Training Device Center, Orlando, Fla.
- 26—Belock Instrument Corp., College Point, N.Y. \$2,153,810. Gyros for gun platform stabilization. College Point. Naval Ordnance Systems Command.
- 27—Lockheed Aircraft, Marietta, Ga. \$7,600,000. EC-130 aircraft. Marietta. Naval Air Systems Command.
- Martin Marietta, Washington, D.C. \$2,400,000. Classified work on Navy aircraft. Middle River, Md. Naval Air Systems Command.
- Manpower, Inc., Milwaukee, Wis. \$1,967,426. Mess attendants and for food handling services at the Naval Training Center, Great Lakes, Ill. Naval Training Center, Great Lakes, Ill.
- Grumman Aircraft Engineering Corp., Bethpage, N.Y. \$1,005,785. Airframe spare parts for A-6A aircraft. Bethpage. Naval Aviation Supply Office, Philadelphia, Pa.
- 30—Sanders Associates, Inc., Nashua, N.H. \$1,466,593. Electronic equipment. Nashua. Naval Air Systems Command.
- Martin-Marietta, Orlando, Fla. \$34,520,170. Walleye guided weapons. Orlando. Naval Air Systems Command.
- Sperry Rand Corp., Great Neck, N.Y. \$3,000,000. Additional prototype models of the Phase II integrated light attack avionics system. Great Neck. Naval Air Systems Command.
- 31—North American Aviation, Inc., Anaheim, Calif. \$1,963,760. Design and fabrication of one development model of a digital disk file memory bank for computing equipment. Anaheim. Naval Ship Systems Command.
- Lockheed Missiles & Space Co., Sunnyvale, Calif. \$1,484,660. Polaris missile modification kits. Sunnyvale. Special Projects Office.
- Raytheon Co., Lexington, Mass. \$1,505,027. Additional service model dual radar sets. North Dighton, Mass. Naval Ordnance Systems Command.
- Aluminum Company of America, Pittsburgh, Pa. \$2,638,944. Aluminum extrusions used to manufacture AM2 airfield landing mats. Lafayette, Ind. Naval Air Engineering Center, Philadelphia, Pa.
- Dow Chemical Co., Midland, Mich. \$4,677,759. Aluminum extrusions used to manufacture AM2 airfield landing mats. Madison, Ill. Naval Air Engineering Center, Philadelphia, Pa.
- Washington Aluminum Co., Baltimore, Md. \$1,457,659. Fabrication of AM2 aluminum airfield landing mats and pallet assemblies. Enterprise, Ala. Naval Air Engineering Center, Philadelphia, Pa.
- Harvey Aluminum, Inc., Torrance, Calif. \$4,091,655. AM2 aluminum airfield landing mats and pallet assemblies. Torrance. Naval Air Engineering Center, Philadelphia, Pa.
- 11—Hughes Aircraft, Culver City, Calif. \$4,485,773. Modification of air defense radar systems. Los Angeles. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.
- Honeywell, Inc., Hopkins, Minn. \$4,814,800. Production of bombs and related equipment. Hopkins. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Maxson Electronics Corp., Macon, Ga. \$8,467,585. Production of bomb fuze components. Macon. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah.
- Marquardt Corp., Van Nuys, Calif. \$1,500,000. Work on a hypersonic Ramjet engine program. Van Nuys. Systems Engineering Group, Research & Technology Div., (AFSC), Wright-Patterson AFB, Ohio.
- Hughes Aircraft, Culver City, Calif. \$1,875,532. Checkout and testing of the Minuteman guidance system. Culver City. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex.
- Lockheed Missiles & Space Co., Sunnyvale, Calif. \$3,000,000. Engineering services in support of the Agena space vehicle program. Sunnyvale. Space Systems Div., (AFSC), Los Angeles, Calif.
- 6—System Development Corp., Santa Monica, Calif. \$12,570,000. Updating of computers and preparation of system training programs. Santa Monica. Sacramento Air Materiel Area, (AFLC), McClellan AFB, Calif.
- Boeing Co., Wichita, Kan. \$1,243,008. Field modification services for B-52 aircraft. Barksdale AFB, La. and Castle AFB, Calif. Oklahoma City Air Materiel Area, (AFLC), Tinker AFB, Okla.
- General Motors, Allison Div., Indianapolis, Ind. \$13,500,000. Development and production of a new turbofan engine for the Air Force AOTD subsonic attack aircraft. Indianapolis. Aeronautical Systems Div., (AFSC) Wright-Patterson AFB, Ohio.
- 9—Sperry Rand Corp., Phoenix, Ariz. \$1,674,840. Aircraft gyroscopes compass systems. Phoenix. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Lear Siegler, Inc., Grand Rapids, Mich. \$1,133,139. Production of aircraft bombing computers. Grand Rapids. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 10—General Dynamics, Fort Worth, Tex. \$1,677,956. Engineering support services for B-58 aircraft. Fort Worth. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex.
- AVCO Corp., Richmond, Ind. \$2,600,000. Production of bomb fuzes and related equipment. Richmond. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Cessna Aircraft, Wichita, Kan. \$1,640,000. Production of T-37 aircraft and related equipment. Wichita. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Aluminum Company of America, Cleveland, Ohio. \$3,143,500. Installation of machine tools and production equipment. Cleveland. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Dynalectron Corp., Fort Worth, Tex. \$2,100,000. Repair and maintenance of F-4C aircraft. George AFB, Calif. Oklahoma City Air Materiel Area, (AFLC), Tinker AFB, Okla.
- Douglas Aircraft Co., Santa Monica, Calif. \$2,759,426. Launch support services at Vandenberg AFB, Calif. Space Systems Div., (AFSC), Los Angeles, Calif.
- Aerojet-General Corp., Sacramento, Calif. \$2,203,000. Research, development, and production of Stage III Minuteman missile motors. Sacramento. Ballistic Systems Div., (AFSC), Norton AFB, Calif.
- Cullman Metalcraft, Inc., Cullman, Ala. \$1,331,200. Production of bomblet dispensers. Cullman. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 12—Collins Radio Co., Cedar Rapids, Iowa. \$1,007,720. Production of communications equipment for F-111 aircraft. Cedar Rapids. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Aerodex, Inc., Miami, Fla. \$1,589,801. Overhaul of J-57 aircraft engines. Miami. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.
- TRW Inc., Redondo Beach, Calif. \$2,500,000. Feasibility studies of penetration aids. Redondo Beach. Ballistic Systems Div., (AFSC), Norton AFB, Calif.
- 13—Goodyear Aerospace Corp., Litchfield Park, Ariz. \$1,605,410. Production of components for radar mapping systems. Litchfield Park. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- General Electric, West Lynn, Mass. \$3,297,100. Production of J-85 aircraft engines. West Lynn. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Lockheed Missiles & Space Co., Sunnyvale, Calif. \$2,382,263. Launch services at Vandenberg AFB, Calif. Sunnyvale. Space Systems Div., (AFSC), Los Angeles, Calif.
- Sperry Rand Corp., Great Neck, N.Y. \$1,000,000. Modification of bomb navigation systems on B-58 aircraft. Great Neck. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.
- 16—Ladish Co., Cudahy, Wis. \$1,600,000. Acquisition and installation of machine tools at Air Force Plant Number 58. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- I.B.M., Owego, N.Y. \$1,500,000. Production of data processing equipment. Owego. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 17—Taylor Forge & Pipe Works, Chicago, Ill. \$2,328,512. Acquisition and installation of machine tools and production equipment to support Air Force programs. Chicago. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 18—General Electric, West Lynn, Mass. \$2,500,000. 1967 component improvement engineering program for J-85 engines. West Lynn. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 19—Condec Corp., Stafford, Conn. \$1,233,303. Production of fuel servicing tank trucks. Stamford. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.
- National Lead Co., Toledo, Ohio. \$3,480,000. Production of bomb components. Toledo. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Sylvania Electric Products, Needham Heights, Mass. \$3,150,000. Engineering support relative to the ground electronic system of the Minuteman missile program. Needham Heights. Ballistic Systems Div., (AFSC), Norton AFB, Calif.
- Hughes Aircraft, Culver City, Calif. \$1,640,289. Spare components and spare parts for F-106 aircraft air weapons control systems. Culver City. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.
- North American Aviation, Anaheim, Calif. \$1,570,000. Production of airborne navigational equipment. Anaheim. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 20—International Telephone & Telegraph Corp., Nutley, N.J. \$1,064,600. Production of navigational equipment for C-141 and HC-130 aircraft. Nutley. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Talley Industries, Mesa, Ariz. \$1,825,810. Production of aircraft engine starter cartridges. Mesa. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Texas Instruments, Dallas, Tex. \$1,169,962. Production of infrared detecting equipment for F-4 aircraft. Dallas. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- United Aircraft, Sunnyvale, Calif. \$5,864,050. Design, development, fabrication, delivery and flight testing of large segmented solid propellant motors. Sunnyvale.

MARINE CORPS

- 19—Gould National Batteries, St. Paul, Minn. \$2,216,861. Production of batteries for use in ANPRC/47 and ANPRC/41 radios. St. Paul. Headquarters, Marine Corps.

AIR FORCE

- 4—Douglas Aircraft, Tulsa, Okla. \$2,000,000. Non-recurring maintenance of Air Force Plant #3. Tulsa. Aeronautical Systems Div., (AFSC), Wright-Patterson, AFB, Ohio.
- North American Aviation, Anaheim, Calif.

Space Systems Div., (AFSC), Los Angeles, Calif.

- 23—Texas Instruments, Dallas, Tex. \$1,571,026. Production of spare parts for the radar system on RF-4C aircraft. Dallas. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.
- Douglas Aircraft, Santa Monica, Calif. \$2,587,861. Conversion of Thor missiles to standard launch space boosters. Santa Monica. Space Systems Div., (AFSC), Los Angeles, Calif.
- General Electric, Arkansas City, Kan. \$1,422,546. Overhaul and modification of J-85 engines and components. Arkansas City. Oklahoma City Air Materiel Area, (AFLC), Tinker AFB, Okla.
- Cessna Aircraft, Wichita, Kan. \$3,600,000. Procurement of A-37B aircraft, spare parts, aerospace ground equipment and data. Wichita. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 24—AVCO Corp., Wilmington, Mass. \$1,624,744. Design, development, fabrication, test and evaluation of Minuteman Mark 11A re-entry vehicles. Wilmington. Ballistic Systems Div., (AFSC), Norton AFB, Calif.
- 25—Philco-Ford Corp., Palo Alto, Calif. \$2,500,000. Work on a satellite control network. Palo Alto. Air Force Satellite Control Facility, (AFSC), Los Angeles, Calif.
- 26—IBM Corp., Owego, N.Y. \$1,000,000. Aircraft avionics systems. Owego. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Olin Mathieson Chemical Corp., East Alton, Ill. \$1,830,680. Cartridge type engine starters for aircraft Marion III. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Lockheed Aircraft Corp., Burbank, Calif. \$1,483,928. Non-recurring maintenance activities at Air Force Plant No. 14. Burbank. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Kollsman Instrument Corp., Elmhurst, N.Y. \$2,282,280. Production of altimeters for Navy and Air Force aircraft. Elmhurst. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- LTV Electrosystems, Inc., Greenville, Tex. \$2,000,000. Production of airborne command and control systems. Greenville. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 27—General Motors, Indianapolis, Ind. \$1,605,000. Production of T-56 engines and related data. Indianapolis. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- General Electric, West Lynn, Mass. \$4,950,000. Component improvement programs for the T-58 and T-64 helicopter engines. West Lynn. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- LTV Aerospace Corp., Dallas, Tex. \$1,565,757. Work on the KC-142 tri-service transport. Dallas. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Northrop Corp., Hawthorne, Calif. \$5,171,037. Production of T-38 aircraft and related equipment. Hawthorne. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- 31—General Motors, Indianapolis, Ind. \$1,759,748. Development of an advanced gas turbine generator. Indianapolis. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.
- Lockheed Aircraft, Burbank, Calif. \$7,350,000. Modification of C-121 aircraft. Burbank. Sacramento Air Materiel Area, (AFLC), McClellan AFB, Calif.
- United Technology Center, Sunnyvale, Calif. \$2,977,040. Procurement of TITAN III Manned Orbiting Laboratory (MOL) Long lead hardware for solid rocket motors. Sunnyvale. Space Systems Div., (AFSC), Los Angeles, Calif.
- AVCO Corp., Wilmington, Mass. \$3,500,000. Work on a re-entry vehicle program. Wilmington. Ballistics Systems Div., (AFSC), Norton AFB, Calif.
- Textron, Inc., Grants Pass, Ore. \$2,878,917. Weapons ejector racks for F-4C aircraft. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.
- Kaman Aircraft Corp., Bloomfield, Conn. \$2,049,957. Production of HH-43 helicopter components. Bloomfield. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga.

Air Force Buys New Forward Controller Aircraft

The U.S. Air Force has purchased 176 Cessna "Super Skymaster" Model 337 aircraft to be used primarily in forward air controller (FAC), liaison and observation functions and a few to be modified for use in psychological warfare.

The Aeronautical Systems Div., Air Force Systems Command, awarded a \$4.5 million letter contract to Cessna Aircraft Co., Wichita, Kan., Dec. 29 as part of an estimated \$11.7 million definitive contract for the aircraft.

First production aircraft will be available to begin aircrew training in the spring of 1967. The first squadron will be operational in mid-1967.

The new plane, designated the O-2, will be a one-for-one replacement of the O-1 Cessna "Bird Dog" in the Airborne Forward Air Controller mission.

The O-2 is a high-wing, all metal aircraft with retractable tricycle landing gear. Two engine reliability and ease in handling under varied power conditions are gained through its unique center line mounted, opposed twin engines, one forward and one aft of the cabin between the twin tall booms. The O-2 has dual, side-by-side pilot controls plus provisions for carrying up to four passengers or equivalent cargo in the cabin. Its low cost and minimum maintenance needs suit remote site operation.

Air Force Tests New Gyroscope

The U.S. Air Force is testing a new electrostatic gyroscope (ESG)—part of a highly accurate inertial navigation system—which operates without wheels, axles, or contacting surfaces by using electrically charged plates to suspend a rotating hollow sphere.

Honeywell, Inc., has been contracted by the Air Force Avionics Laboratory, Wright-Patterson AFB, Ohio, to develop the concept. The ESG is being flight tested as a part of a stabilized platform with associated electronics on a C-124 aircraft.

Air Force technicians expect a high degree of reliability from the ESG and predict a capability of operating over extensive environment ranges. In addition, it can be used in either a gimbaled or strap-down system. Because of these characteristics, the ESG is particularly adaptable to satellites and space vehicles, as well as aircraft.

Project engineer Captain Eugene J. DeNezza explains that the ESG has unusual accuracy because the rotating beryllium sphere "floats" in an evacuated area surrounded by charged electrodes. This kind of suspension eliminates friction, the main source of drift or inaccuracy in conventional gyroscopes.

Industrial Security Award Winners Announced by Defense Supply Agency

Winners of the annual James S. Cogswell awards for superior performance in carrying out industrial security obligations relating to classified defense contracts have been announced by Vice Admiral Joseph M. Lyle, USN, Director of the Defense Supply Agency.

Two types of awards were made: plaques for outstanding performance and certificates for excellence. Eight plaques and eight certificates were awarded for four categories of defense contractors, classified according to the size of their industrial operations.

Plaques went to Grumman Aircraft Engineering Corp., Bethpage, N.Y.; Lockheed-Georgia Co., Marietta Ga.; TRW Systems, Redondo Beach, Calif.; Conductron Corp., Ann Arbor, Mich.; Denver Research Institute, University of Denver, Denver, Colo.; Radiation, Inc., Palm Bay, Fla.; Auto-netics Div., North American Aviation, Inc., Dayton, Ohio; and Smyth Research Associates, San Diego, Calif.

Certificates of excellence were presented to General Motors Defense Research Laboratory, Goleta, Calif.; Franklin Institute, Philadelphia, Pa.; Librascope Group of General Precision, Inc., Glendale, Calif.; Southern Bell Telephone and Telegraph Co., Atlanta, Ga.; Wasatch Division of Thiokol Chemical Corp., Brigham City, Utah; TRW, Inc., Cleveland, Ohio; Bliley Electric Co., Erie, Pa., and Systems Development Corp., Dayton, Ohio.

Some 15,000 industrial firms having DOD security clearances to perform on classified contracts were considered for the awards.

Factors in selecting the winners included: degree of security consciousness, security education and motivation programs, regular inspections by contractors of security practices within the organization, security review procedures in company publications and adaptation of new security methods in such areas as reproduction and transmission of documents, control of movement of employees and visitors within plants.

The award is named in honor of Colonel James S. Cogswell, USAF, (Ret.), first chief of a centralized office of industrial security established under the Deputy Director for Contract Administration Services of the Defense Supply Agency in January 1965.

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Defense Contract Administration Services Completes First Year of Full Operation

The first year of full operation of Defense Supply Agency's Defense Contract Administration Services (DCAS) saw an increase of 54 percent of prime contracts handled by the new organization. This workload was accomplished with an increase of less than 19 percent in personnel. Payments to contractors jumped from 90,000 paid invoices a month to more than 160,000 a month during the year.

Eleven regions across the country, beginning with Philadelphia as a pilot test region, were established on a time-phased basis by the end of 1965.

The establishment entailed consolidating 20,000 military and civilian employees, who previously performed field contracts administration under separate systems of the Army, Navy, Air Force and the Defense Supply Agency. About the same number of personnel are performing contract administration in the Military Departments.

DCAS provides contract management services in or near contractors' plants to the Military Departments and NASA to assure delivery of quality products to depots or battlefields on a timely basis. These include pre-award surveys of potential contractors to determine their capability to perform, quality assurance engineering assistance, surveillance of production progress, transportation, packaging management and prompt payments of invoices.

Payment of contractors was one of the major problems when each region took over the invoices from the individual services. Continual improvement was made during 1966 so that the time cycle for payment of invoices was reduced from an average of 18 days to 11 days. This was accomplished despite an 81 percent increase in number of invoices processed.

Before the organization of DCAS, 444 offices of Military Departments were administering defense contracts. DCAS consolidated 180 of these offices into 99, all operating under uniform policies and procedures. Now defense contractors can look to a single organization for all problems or questions that might arise on a contract being administered by DCAS regardless of whether the contract was awarded by the Army, Navy, Air Force, Defense Supply Agency, NASA, or any other Government agency.

Deferred Construction Projects Released

Secretary of Defense Robert S. McNamara has rescinded a 1965 order deferring the award of contracts for more than 550 military construction projects, including 8,250 family housing units, totaling \$564 million.

The projects, located at 285 installations in 42 states, the District of Columbia and 16 sites outside the United States, were authorized in FY 1966 and previous years.

In announcing the deferment on Dec. 21, 1965, Secretary McNamara stated that these projects, while considered necessary and desirable, could be temporarily deferred without impairing military operations or effectiveness.

The go-ahead signal on the contracts was given to benefit morale in the Armed Forces and to satisfy valid construction and housing requirements.

Prior to the rescinding order, a limited amount of the \$620 million of deferred projects were released as a result of deployment changes or other compelling reasons which increased their urgency. These projects which were released between December 1965 and January 1967 amounted to \$33.8 million.

Some projects, amounting to about \$23 million, have been dropped completely since the deferment action.